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CENTENARIES IN 1942.

By HARVEY SUTTON,
Sydney.

INTRODUCTION.

NUMBERS have always had a fascination of their own for many minds, a fascination which is not easy to explain. Our forefathers of old gave to individual numbers a deeper, almost magical significance.

In the Old and New Testaments many examples are seen. The figure one, of course, represented the Deity for the Hebrews, the one and only God, instead of the series of threes and nines the Egyptians loved. Three appears again in the Christian Trinity. Eight and ten were favourites in religious ritual, as in the day of circumcision and in the measurements of the temple. Twelve was preferred in organization, like the twelve tribes and the twelve apostles. Seven was related to rest and recreation—the seventh day for the Sabbath, when even journeys were rationed and work forbidden, the seventh year when the land lay fallow and debts were wiped out. Seven times seven brought the jubilee year of rejoicing. The seventh day for rest, one of the greatest gifts to humanity of any race, may have been driven home by the Babylonian captivity, for in Babylon nothing was done on the seventh day because it was an unlucky day. Forty is repeatedly used for periods of separation, penance and penalty—forty years' wandering in the wilderness, forty days' fast; St. Paul almost regretfully records that he had suffered stripes forty save one. The North Italian cities in the fifteenth century were face to face with a real difficulty. Plague drove panic-stricken people from city to city, and cities became only too well aware that these refugees might develop plague after arrival and spread the epidemic. So they kept them out, and they had to exist in camps outside the walls. As trade was

the very life blood of these cities, the question arose as the plague died down as to when these contacts with the infected could be allowed to enter the general community. A committee of the learned, chiefly theologians and lawyers, carefully considered the problem. They knew next to nothing of how plague spread, but in the Scriptures they found this number forty, the number for separation. So they decided (Venice, 1374) to keep out people who had been contacts of the sick until forty days after the last case of illness; hence the term "quarantine" for this forty-day period of separation of contacts from others. It was indeed a "lucky strike". Almost every incubation period of infectious disease is much shorter, and so it worked. Its use spread all over Europe and later all over the world, and although the period has varied in length with different countries at different times and today with different diseases, the old name still sticks.

It is not clear how the centenary came to be popular. The use of the zero was not known to the Greeks; probably they would have thought it nonsense—giving something for nothing, so to speak. Certainly the year A.D. 1000 was the occasion for a great upset in Christendom. It was generally thought that the end of the world was due. Whilst some were terrified, others spent their wealth in one last final bout of dissipation. Many times since many dates have been selected by mysterious calculators; but the old world still keeps on turning. It may be that centenaries may be linked up with the double jubilee.

The first centenary of importance in Australia was, of course, the celebration of the first 100 years since Australia was settled, in 1888. The adjective "centennial" seemed to be the favourite at that time—Colorado had been called the "centennial" State in 1876—while recently we have had that queer creation, the sesquicentenary. Schools, newspapers, business corporations, universities, hospitals, have all kept up the idea of celebrating centenaries, bicentenaries and so on. Among the recent examples of medical interest were the tercentenary of Harvey's discovery of the circulation of the blood (1628) and the centenary of Laennec's death (1826).

For some time *The Lancet* has published a paragraph from its publication of 100 years ago. Just recently in Sydney Dr. Guy Griffiths gave a charming résumé of Newton's relation to medicine, as the month of December, 1942, was the tercentenary of the birth of that great genius.

A little while back, when I was recovering from those annoying bouts called or miscalled influenza, during which we so speak live in "the passive voice of life", a search for centenaries helped to pass the time and this article is the result.

Centenaries, one must confess, provide a rather chancy and artificial selection of famous persons. A far more convincing picture would be provided by a description of the happenings of a year 100, 200 or 300 years ago, the "annus mirabilis", so to speak. The usual practice is to record the exits and entrances from the world's stage, either the dates of death or those of a birth. This tends to be somewhat misleading, as few reach prominence till at least thirty years after their birth, and the longer-lived may have retired from active life for many years. It is, however, difficult to select the peak of any man's prowess—his prime of life—except so far as it is suggested by the date of publication of an important treatise or paper.

Births, deaths, works, will therefore be the main events whose dates are chosen where they fall into the forty-second year of a century, and some notes made of activities of medical interest 100 years ago.

PART I.

Births in 1842.

Joseph Breuer (1842-1925), psychiatrist, interested in the psychology of the sexual functions, introduced with Freud the cathartic method of questioning under hypnosis based on the now familiar conceptions of the unconscious mind and mental functions.

Friedrich Bezold (1842-1908), otologist, born at Rothenburg ob der Tauber, gave the first description of mastoiditis in 1877 and brought in new tests for deaf mutism in 1896 and for unilateral deafness in 1897. He published a treatise in October, 1906.

Wilhelm Camerer (1842), a paediatrician, wrote on the metabolism of infancy and childhood in 1894.

Sir James Crichton-Browne (1842-1938) contributed to the study of cortical function. He was both a gifted writer and an attractive speaker. In 1884 he published an important report on "Overpressure in School", a subject that has since been discussed again and again, and he wrote on child study and pathology in 1913.

Vincenz Czerny (1842-1916), gynaecologist and surgeon, of Trautentau, Bohemia, professor of surgery at Freiburg and Heidelberg, successfully enucleated subperitoneal fibroids of the uterus using the vaginal route in 1881, though he failed to suture an eroded jugular vein. He is perhaps better known for his efforts against cancer, which brought about the opening of the *Samariterhaus* in 1906 at Heidelberg.

Heinrich Quincke (1842-1922), neurologist, first noted angioneurotic oedema in 1882. He is best known by his introduction of lumbar puncture in 1895, which led to the use of cytodiagnosis.

Gustaf Magnus Retzius (1842-1919), of Lund, professor at the Karolinska Institute from 1877 to 1900, anthropologist and histologist, investigated hearing in bony fishes (1872) and in vertebrates (1881 to 1884), also the macroscopic anatomy of the brain (1896). He published albums of studies of skulls in Finland and Sweden in 1898, and histological studies from 1890 to 1914.

Jacques-Louis Reverdin (1842), the Swiss surgeon, produced experimental myxedema by thyroideectomy in 1882. His needle holder is still in use.

Charles Otis Whitman (1842-1910), of Maine, professor of zoology at the University of Chicago in 1892, founded *The Journal of Morphology* in 1887 and *The Biological Bulletin* in 1899. His chief efforts were studies of the

embryology of *Clepsine* in 1872 and of the cell theory of development in 1895.

All of these were men of real talent; none could claim to be a genius, yet their contribution to knowledge was of real value.

Deaths in 1842.

The deaths in 1842 included those of two famous men—Sir Charles Bell and Baron Larrey.

Sir Charles Bell (1744-1842), the leading anatomist of his time in Great Britain, was a son of a Scottish episcopal clergyman. His brother, John Bell, was a noted surgeon, and opened a school of anatomy in Edinburgh in 1740. Charles Bell took up teaching in London in 1804. He joined Wilson (1812) at the famous school of anatomy founded by William Hunter in Great Windmill Street (1768). Later, in 1836, Bell returned to Edinburgh. His real artistic ability enabled him to illustrate his own works. They were: "System of Dissections" (1798); "Engravings of the Brain and Nervous System" (1802); "Bridgewater Treatise on the Hand" (1883); "Anatomy of Expression" (1806) (in this he was very sensitive to the mistakes of artists—Bernini's statue of David with lips tightly compressed and anxious expression made Bell think he looked as if a flea was biting him). In "A New Idea of the Anatomy of the Brain and Nervous System" (1811), he showed that the roots of the spinal nerves differed, the anterior root being motor in function. He was the first to state the conception of muscle sense as an addition to the ancient five senses. In 1829 he showed that the fifth nerve was sensorimotor, described Bell's palsy, and showed the action of the motor nerve to the face. His book on the nervous system (1830) describes pseudo-hypertrophic paralysis and Thomsen's disease. His epitaph at Worcester sums up his life thus: "Who after unfolding with unrivalled sagacity patience and success the wonderful structure of our mortal bodies esteemed lightly of his greatest discoveries except only as they tended to impress himself and others with a deeper sense of the infinite wisdom and ineffable goodness of the Almighty Creator."

Jean Dominique Larrey (1766-1842), the great French military surgeon, introduced flying ambulances into Napoleon's army and thus was the pioneer in first aid to the wounded. Larrey wrote on Egyptian ophthalmia in 1802, and was the first to point out its contagious character. His "Memoirs of Military Medicine" (1812 to 1817) include the first description of "trench foot". He was surgeon-in-chief to the *Grande Armée* and took part in 60 battles and 400 minor engagements. He was three times wounded. At Borodino he is said to have carried out 200 amputations in twenty-four hours. He was the first to perform an amputation (and that successfully) at the hip joint. Napoleon left 100,000 francs to Larrey, "the most virtuous man I have ever known". He stands high in esteem both for his courage and for his humanity.

François Prévost (1746-1842), of Louisiana, performed Caesarean section four times prior to 1827, with three successful cases. The first time the operation had been performed in America was 1827. The operation has, however, been successfully performed by medicine men of primitive tribes.

Discoveries in 1842.

In 1842 a number of individual discoveries were made, some of outstanding importance. The list includes the following: Hughes Bennett described the aspergilloses; Theodor Bischoff used urea as a measure of metabolism; Alexandre Donné noted the existence of blood platelets; John Goodsir, anatomist and pathologist, of Edinburgh, described sarcinae in the stomach.

Crawford Williamson Long (1815-1878), of Danielsville, Georgia, who had qualified in 1839 from the University of Pennsylvania, administered ether for the removal of a small cystic tumour from the back of the neck of a patient on March 30, 1842, and used it in other cases. Unfortunately he did not publish his results, and this ingenious effort had no influence on practice. It was left to William Morton to bring ether before the world in 1846.

Physiology.

In physiology, Dr. Robert Mayer, physician, of Heilbronn, and in physics, James Prescott Joule, of Manchester, share the credit for outlining the great law of the conservation of energy, which Helmholtz applied to the whole field of physics and chemistry in 1847, and which has been invaluable, especially in studies of metabolism and nutrition.

Wohler crashed through the old idea that "organic" compounds were produced only by living processes, with the synthesis of urea (1828) and of hippuric acid from benzoic acid (1842).

Liebig published the classification of foodstuffs and studied nutritive processes in his "Organic Chemistry" (1842).

Hermann von Helmholtz made his first appearance in scientific literature with his inaugural dissertation on the microscopic study of nerve fibres in the ganglia of leeches, while Friedrich W. Bidder and Alfred W. Volkmann described the small medullated fibres from the sympathetic and spinal ganglia and thus added to the understanding of the autonomic nervous system.

Research in physiology was definitely under way.

Carlo Matteucci, working in electrophysiology, had talked of "tetanizing" muscle in 1838, and in 1842 he noted that when the nerve of a muscle-nerve preparation was laid across another contracting muscle its own muscle contracted—the so-called "rheoscopic frog" effect, which Kolliker later applied to the heart.

Johannes Evangelista Purkinje had just gone to the physiological laboratory at Breslau—the first definite example of organized research in physiology.

In England W. B. Carpenter brought out his text-book on physiology, and in Germany Rudolf Wagner produced his "Handwörterbuch", which are among the pioneer works on the subject.

Matthias Jacob Schleiden, who had studied law and medicine, published his "Grundzüge der wissenschaftlichen Botanik" at Leipzig (1842-1843)—an epoch-making work in plant physiology. He had already emphasized the part played by the nucleus ("cytoblast") of the cell first seen in 1831 by Robert Brown. With Schwann and Schleiden the cell theory came into its own, and the realization of the structural similarity of animal and vegetable tissues brought into being the science of morphology.

Pathology.

Pathology is represented by the following works.

Jean Cruveilhier's "Anatomie pathologique" was completed between 1835 and 1842, with its magnificent atlas in 1842. It included the first description of disseminated sclerosis and of the progressive muscular atrophy (Aran-Duchenne type) which used to be called Cruveilhier's palsy. This is one of the best macroscopic studies of pathological structure.

The microscope was coming into action, as mentioned in Goodsir's finding of *sarcina ventriculi*; and Hughes Bennett's work on the parasite in the aspergilloses was one of the first studies in parasitology and anticipated the rise of bacteriology.

Carl Rokitansky described acute dilatation of the stomach in 1842, and began to issue his *Handbuch der pathologischen Anatomie* in Vienna (1842-1846). He dealt with over 1,500 dead bodies yearly and was said to have personally performed 30,000 autopsies.

Clinical Medicine.

In clinical medicine the following may be noted.

William Budd, of North Taunton, Devonshire, a veritable genius, wrote a famous paper on symmetrical disease (1842).

James Braid, the pioneer of scientific hypnosis, described the subjective trance in 1842 as neurohypnotis or hypnosis. Mesmer had popularized the idea of animal magnetism (1779), and later Esdaile, working from Indian experience,

studied hypnotic anaesthesia for surgical operations, and Elliotson also succeeded in London.

James Manby Gully, of Malvern, helped to introduce hydrotherapy into regular use.

John Ware (1795-1864), of Massachusetts, wrote a monograph on croup.

William Wood Gerhard (1809-1872), of Philadelphia, wrote a valuable treatise on diseases of the chest.

Guggenbuhl gave interesting information on cretins.

Surgery.

Surgery had perhaps passed its golden period of the late eighteenth century, though great names are still found in this pause before the amazing flowering made possible by anaesthesia and antisepsis.

Sir William Ferguson, of Prestonpans, Scotland (1808-1877), published his "System of Practical Surgery" in 1842; he was noted for his astonishing speed and skill, the sequel to the most careful planning of the operation step by step. No one can claim the record of successes he had in cleft palate and in hare-lip. His greatest achievement was his founding of conservative surgery, a principle which, with his ingenuity, accounts for his success in plastic work.

James Syme, of Edinburgh (1799-1870), on September 8, 1842, carried out his first successful amputation at the ankle joint (Syme's amputation). He was blessed with a sound mind and even temper, but still greater blessed by his great pupil and son-in-law Joseph Lister, whose antiseptic work he supported.

Other Subjects.

Carl Friedrich Canstatt (1807-1850), of Ratisbon, pupil of Schönlein, wrote the standard text-book on practice in Germany, and also made observations on dislocations (1842).

Philippe Ricord (1799-1889), a native of Baltimore, of French parents, and a graduate of the Paris faculty, cleared up the confusion regarding the supposed identity of the infection in gonorrhoea and syphilis. John Hunter had inoculated himself, but unfortunately he used a mixed infection, and the result was thus misleading. In 1842 Ricord wrote a valuable paper on gonorrhoeal conjunctivitis. Oliver Wendell Holmes names him as so great a septic on morality that he would have ordered a course of blue pills for the vestal virgins.

James Young Simpson (1811-1870), who had been appointed professor of obstetrics in 1840 at the age of twenty-eight, wrote a review of the history of leprosy in Scotland (1841-1842). His part in the introduction of chloroform as an anaesthetic was to make him famous (1847).

Gustav Adolf Michaelis, who had performed in 1840 a successful Cesarean section—the fourth on the same patient—studied the flat pelvis and its rachitic variety ("Das enge Becken", 1842), and Robert described the straight, narrow pelvis due to defective sacral development. This followed Naegele's description of the obliquely contracted pelvis, and the spondyloolisthetic pelvis noted by Rokitansky (1839).

Recamier brought in the vaginal *spéculum plein et brisé*.

In skin diseases, Sir William James Erasmus Wilson (1809-1884), a well-trained anatomist, popularized dermatology by his work on diseases of the skin (1842) and began a fine collection of preparations which he later gave to the Royal College of Surgeons, where he also endowed a chair for dermatology.

Schönlein (1839) had described the fungus cause of favus. Robert Remak (1815-1865) was to define clearly the three leaf-like layers of the early embryo with which we are all familiar—ectoderm, endoderm and mesoderm. Already he had studied the frog's heart and seen the non-medullated nerve fibres and the ganglia in the *sinus venosus*, now regarded as the source of the heart impulse. In 1842, in Schönlein's clinic, he inoculated himself with favus and

isolated the particular *Oidium* fungus, calling it *Achorion Schöönleini*. He was also a great neurologist; but he would have no place in the Germany of today, for he was not of Nordic descent!

David Gruby (1810-1898) studied the fungus of *tinea sycosis* (1842) and the next year trypanosomes in the frog's blood.

Jacob Henle, a superb anatomist and histologist, had in 1836 founded our knowledge of epithelium and in 1840 shown the secret of vasomotor activity by his finding of the media or involuntary muscle coat of the arterioles. In 1840 he wrote the classic essay "On Miasms and Contagia", and in 1841 his great treatise on histology, "*Allgemeine Anatomie*". In 1842 he founded together with Pfeuffer the *Zeitschrift für rationelle Medicin*.

Golding Bird (1814-1854), of Norfolk, who was working on static electricity at Guy's Hospital, described oxaluria (1842) and later produced a work on urinary deposits (1845).

Sir William Bowman (1816-1892), of Cheshire, physiologist and ophthalmic surgeon, described the basement membranes (1842). He had already, in 1841, discovered the striated muscle. In 1842 he described the capsule around the glomeruli and the urinary tubules. He regarded the glomerular epithelium as a secreting gland extracting water which would wash down the more solid secretions of convoluted tubules, urea, uric acid *et cetera*. He shares with Liebig and Wohler, Ludwig and others, the new interest in the biochemical study of the body.

Johann Friedrich Dieffenbach (1792-1847), of Königsberg, a soldier and a surgeon, succeeded von Graefe as professor at Berlin. He is noted for his work on strabismus, in which he relied on tendon division. (The word strabismus is said to be derived from Strabo, the Greek geographer, who had a pronounced squint.) English surgeons at this time were greatly interested in his special operation for stammering. He claimed that blockage occurred between the soft palate and the back of the tongue, and that this caused the trouble. He removed a "chunk" of tongue so that the block could not occur and reported fifty operations with 100% successes! The operation, though widely practised, has fortunately been relegated to the limbo of far-off forgotten things.

Sir David Brewster studied the mechanism of vision, carrying on the tradition of J. Young and Wollaston.

Public Health.

Public health is now beginning to attract attention. The cholera pandemic (1840-1850) and the epidemic of endemic meningitis (1837-1850) aroused public opinion. Hamburg had installed a sewerage system in 1842. Edwin Chadwick (1800-1890) ended the work on poor law reform (1834-1842) and wrote a classic description of the "Health of the Labouring Classes" (1842), while Lord Ashley, better known as Lord Shaftesbury, put in his report on mines and collieries. So State medicine was gathering speed under the stimulus of the insanitation of the industrial period and the whiplash of pestilence. The poor law report is one of the most important documents in the history of the first half of the nineteenth century.

William Farr, our greatest statistician (1807-1883), was engaged on the series of letters on the causes of death (1839-1870) which was to hasten the progress of vital statistics.

On the educational aspect of handicapped children, one may note that Edouard Seguin, pupil of Itard and Esquirol, who was to do much for the feeble-minded, was appointed instructor to the Bicêtre (1842).

Joseph Pelletier (1788-1842) is worthy of mention for his isolation with Cauentou of quinine and his lifelong work on alkaloids, which revealed the essential nature of ipecacuanha, *nux vomica*, colchicum, opium and many others.

Moritz Heinrich Romberg (1795-1873), neurologist, of Berlin, published his *Lehrbuch der Nervenkrankheiten* (1840-1846), the first formal treatise on nervous diseases

which includes the description of Romberg's sign in ataxia.

Thomas Southwood Smith (1788-1861), of Somerset, took charge of a Unitarian congregation while a medical student at Edinburgh, and later practised medicine and preached in the Unitarian chapel at Yeovil. In 1824 he was physician at the London Hospital and published "A Treatise on Fever" (1830), the standard authority on the subject. In 1825 he had written two articles in *The Westminster Review* on contagion and sanitary laws, and both he and Edwin Chadwick, also a contributor, attracted Jeremy Bentham's attention. Southwood Smith, after Bentham's death and by the instructions in his will, dissected Bentham's body. He was Chadwick's chief medical support in the great three-volumed report of 1842 on "Burial in Towns". Simon states that "for many years it continued to be held in high esteem both at home and abroad as a model of initiative industry and intelligence in the promotion of a great social interest". Southwood Smith sought like Hercules for cleansing of the Augean stable, the scavenging of filth and the cleansing of the gross insanitation of so-called civilized cities. He was the main medical witness for Ashley's report, which took the complacent by surprise. In the coal mines children of eight were constantly employed, perhaps as a "trapper" crouched in a dark hole for sixteen hours a day looking after the doors which operated the ventilation system, or perhaps harnessed like dogs in a gocart, crawling on all fours along its narrow tunnels. Others, naked to the waist, girls as well as boys, hauled with chains or pushed along the coal trucks. Ashley secured the exclusion of women and girls and boys aged under thirteen years. Yet many kindly people voted against any interference with the present order for fear that the most serious economic failure might result and chaos would come again.

The year 1842 saw William Stokes appointed Regius Professor in Dublin, where his clinical studies were to revolutionize our knowledge of heart disease.

Edmund A. Parkes went out to Madras in the Royal Army Medical Service, later to return as our first professor of hygiene (military).

C. J. B. Williams had much to do with the creation of the Brompton Hospital for diseases of the chest (1842), the first special hospital for this type of disease.

Conolly, apostle of non-restraint in mental treatment, was just going into action cutting up coercion chairs at Hanwell Asylum and salvaging 600 leg-locks and handcuffs now abandoned.

Joseph Toynbee (1815), aurist, was elected a Fellow of the Royal Society for his studies of non-vascular tissues, such as articular cartilage, cornea, lens *et cetera*. He was also interested in social questions such as ventilation and housing.

Medicine and Science in 1842.

Two cross-sections of medical and scientific opinion and interest during that year can be found in the Royal Medical and Chirurgical Society meetings and the meeting for that year of the British Association. The papers at the former were given on tuberculosis, on ulceration of the duodenum after burns (Curling) and on a case of amputation of the thigh during mesmeric coma supported by Elliotson. It was, we learn, provocative of a long discussion by a large attendance, but it was decided not to publish the report; Elliotson resigned the next year.

The Medical Science section of the British Association twelfth meeting (1842) is of real interest. C. J. B. Williams introduced the stethoscope into Britain against considerable criticism; he brought the idea from France to England in 1835. One "diehard" thought that listening to the chest as if it were a box of whistles was beneath the dignity of a physician. Williams tried all sorts of variations and evolved the thin conical bell and the trumpet endings. He also made the first binaural stethoscope. His grandson, Dr. Williams, exhibited this to a group in 1908. It was made of metal and was cumbersome, though useful; it was the prototype of the present instrument.

The excellent report on zoological nomenclature by a committee which included Owen and Darwin seems to have fixed the modern procedure.

A long report on the vital statistics of great towns in Scotland was presented by a committee which included Dr. Alison and Mr. Edwin Chadwick. The report suffered from the imperfect classification of causes of death, then in an early stage of development, but showed clearly the heavy hand of extreme poverty and destitution and the abuse of spirituous fluids.

Another committee recommended the introduction of a decimal system into the weights and measures. This, though well argued, has been carried out almost solely in scientific work.

Erichsen followed up Marshall Hall's finding of sudden death due to interruption of the coronary circulation, and tested it experimentally on the animal heart. One of the sensations of the year had been the sudden death from *angina pectoris* of the famous Dr. Arnold, Head of Rugby School.

Thomas Laycock studied the periodicity of vital phenomena and held that septenaries, periods of seven days, ruled periods of gestation, of hatching, of incubation of fevers. He taught that the diurnal variations of the barometer and of electric tension in the atmosphere as shown by diurnal deviations of the magnetic needle should be studied. He claimed that moths emerged from the pupa case at one particular position of the magnetic needle. The exact position of the moon was also of significance.

Callow discussed the relation of birth month to mortality, births in June and July being associated with the greatest mortality.

John Richardson, Inspector of Hospitals at Haslar, described an accident of a diver engaged on the wreck of the *Royal George* at a depth of about fifteen fathoms and an atmospheric pressure of 2·25 atmospheres. The air pipe burst, and he was hauled to the surface in a minute. The result was that the upper part of the body was swollen and discoloured; it was apparently affected with emphysema and cyanosis, of which Bailey's "Emergency Surgery" has an excellent picture.

References are found to the opium war in China and the taking of Hongkong with its associations of tropical disease, to the recent successful tunnel under the Thames by Brunel, which drew attention to caisson disease, and to the new method of tapping deep water supplies which had been so successful at Arteis (hence the term "artesian").

Medical Literature in 1842.

On the literary side considerable effort was apparent in 1842.

Julius Rosenbaum wrote his "*Additamenta*" (1842) to the great work of Choulant (1791-1861, Dresden) and his biographies, which were completed in 1842 (1808-1842).

Dictionaries were also being completed by C. P. Callisen (1787-1866) during the period from 1830 to 1845 and by Copland during the years 1834 to 1859.

Littré (1801-1881) was engaged from 1839 to 1861 on his classic translation of the works of Hippocrates.

Aborejon began his history of Spanish medicine (1842-1852).

Marx wrote the best biography of that extraordinary character and genius Paracelsus, who had died just over 300 years before (1541).

Auguste Comte (1789-1857), of Montpellier, the first modern sociologist, finished his great work (1839-1842) on positive philosophy.

An Outstanding Figure of 1842.

Justus von Liebig was so outstanding a figure in 1842 that a more detailed note seems appropriate. He was born on May 12, 1803, at Darmstadt, and was a complete failure in linguistic studies as a boy, but was keenly interested quite early in life in chemistry. He was apprenticed to an apothecary; but his interest in fulminating silver for

fire crackers lead to an explosion in his attic bedroom. This caused him to part company with both the window frame and his job. At the age of sixteen he managed to persuade his father to let him go to Bonn and later to Erlangen, where at nineteen he won his degree of doctor of philosophy. His paper on fulminating mercury attracted the attention of the Grand Duke of Hesse, Darmstadt, who gave him the equivalent of a travelling scholarship to Paris. In 1823, with Humboldt's help, he gained entrance to Gay Lussac's laboratories, where he discovered isomerism. His distinguished teacher was so delighted that he insisted on waltzing with Liebig round the laboratory. He collaborated with Wohler in this and in other researches leading to a clearer conception of compound radicles, in particular benzoyl (C_6H_5O). In 1824 he came to Giessen as extraordinary professor and in 1826 was made ordinary professor; he was still there in 1842. He died in 1873.

In 1842 his first great work on animal chemistry was presented at the British Association. He applied organic chemistry with its quantitative methods to physiology. Wohler's production of urea from inorganic sources, Prout's finding of hydrochloric acid in the gastric juice, Gmelin's work on bile, all had broken fresh ground. Though Liebig had no idea of the conservation of energy announced in 1842, he was certain that the heat of the body was the result solely of oxidation processes within the body. He had to support his ideas singlehanded. He classified food into two types: one of nitrogenous substances, albumen *et cetera* forming blood and building the body—plastic food; the other, non-nitrogenous substances, fatty bodies and so-called carbohydrates resembling ordinary fuel serving for the generation of heat—respiratory food. He held that the food of all animals contained, beside the plastic constituents, substances containing only carbon, hydrogen and oxygen. A healthy man was guided by an instinct which prescribed for him the best proportions. In no case could life be long maintained if the proportion of nitrogenous constituents was reduced below a certain fixed minimum. The amount of heat was in proportion to the oxygen consumed, and perhaps five times as much oxygen was consumed as was needed for combustion of the albuminous substances in the food. He realized, too, the value of the ash or minerals in the food.

Liebig opened in this way the wonderful field of exact biochemical research. His extract of meat brought his name before the general public. His idea was a low-temperature watery extract. He thought that in Australia, where lean beef was then worth a halfpenny or less a pound and the wool and hides were the valuable part of the animal, large quantities of extract could be made at low cost. Liebig only advised his extract as a restorative and for use instead of soup with plenty of bread, peas *et cetera*. He never suggested it as a substitute for meat.

Liebig's "Familiar Letters on Chemistry" were most popular and further popularized science in Germany. He started the teaching of practical chemistry. His pupils learned to make pure substances from the crude material. He began a great school of chemistry, a school popular with English students, and Liebig had many friends in Britain like Graham and Faraday. He improved the laboratory buildings and was a pioneer in the university extension movement.

(To be continued.)

REACTION-PRODUCING ANTIGENS IN ECZEMA OF INFANCY AND CHILDHOOD.

By P. WARD FARMER, JUNIOR, M.B., M.R.C.P.,
Acting Physician to the Asthma Research Clinic,
Alfred Hospital, Melbourne.

ALLERGY in childhood is associated with sensitivity to many allergens, including inhalants such as dust, animal epithelium, pollen and certain types of food. The importance of bacterial agents is hard to determine, but it is probably a greater factor in asthma of older children.

In investigating allergic conditions in childhood, one frequently finds that no attempt has been made previously to detect the underlying cause. Especially does this apply to "allergic" eczema. Great improvement may often be brought about by the removal of as many sources of irritation as possible by environmental and dietetic care.

Eczema may be accompanied by hay fever, asthma, urticaria, and digestive disturbances such as vomiting and diarrhoea. Frequently eczema is followed later by asthma and hay fever.

To demonstrate the common "extrinsic" factors that operate in eczema, an analysis of skin tests made on fifty patients is presented. Most of the results are taken from cases investigated at the Asthma Research Clinic, Alfred Hospital, Melbourne, while the remainder are from cases in private practice. Half the patients tested were aged between eight months and five years, and the remainder up to thirteen years; 32 of the patients had bronchial asthma in association with eczema.

The "scratch" method of testing was used. The babies under two years of age were tested on the legs, and when the rash involved the legs the back was used. As the skin of small children is often unduly sensitive, frequent control tests with buffered saline solution were necessary.

The details of testing have been thoroughly described by Sutherland.¹³ When possible powdered reagents are used; otherwise potent extracts and fresh foods such as egg white and milk are employed.

In the table showing the results a "+++" reaction indicates an urticarial wheal of about two or more centimetres in diameter, with irregular outline and pronounced flushing of the surrounding skin. A "+" reaction indicates a small wheal with slight flush. Any reaction between these two is marked as a "++" reaction.

Only the more common inhalants and foodstuffs were tested.

Results of Skin Tests on a Group of Fifty Patients Suffering from Eczema.

The various substances were not all tested on each patient.

TABLE I.

Substance Tested.	Number of Reactions Observed.			Total Number of Patients Tested.
	+++	++	+	
Epithelium and Dust:				
Horse dander	9	9	7	50
Dog hair	0	0	1	33
Cat hair	0	2	4	46
Rabbit fur	0	0	3	36
Cattle hair	1	2	6	37
Mixed feathers	0	1	12	48
Sheep's wool	0	0	1	39
House dust	0	0	15	49
Kapok	1	0	10	47
Tyrethrum	0	0	9	7
Orris root	0	1	2	46
Silk	1	0	0	3
Linseed	2	3	2	44
Castor bean	0	0	0	38
Pollen:				
Capeweed	1	2	5	48
Sunflower	0	0	5	40
Sorrel	1	1	6	39
Rye grass	5	11	9	48
Dahlia	1	2	2	34
Cocksfoot	4	8	6	38
Plantain	1	1	7	46
Poa pretensis	3	6	9	37
Iceland poppy	1	0	5	31
Foodstuffs:				
Egg white	10	13	7	50
Cow's milk	0	2	5	49
Oatmeal	1	0	3	46
Wheat	0	0	8	48
Barley	0	1	1	8
Maize	0	0	0	6
Rice	0	0	1	6
Orange	0	0	1	3

Analysis of the Results.

It is significant that only three patients failed to react to any antigen.

Epithelium and Dust.—Horse dander proves the commonest reaction-producing antigen in the "epithelium and dust" group. It produced a positive reaction in 50% of cases, and the sensitivity appears to be a transmitted hereditary factor, as many of the babies aged under twelve months gave strong positive reactions to horse dander. House dust comes next, having produced a reaction in 31% of cases. The size of the reactions was less than those produced by horse dander, and their occurrence was more general among older children; this suggests an acquired sensitivity. An extract of mixed feathers caused a reaction in 27% of cases, and the size of the reactions approximated to those produced by house dust. Kapok produced a reaction in 23% of cases; this seems of practical significance when kapok is used so often in bedding. Cattle hair produced a reaction in 24% of cases, while linseed, which is contained in paint, varnish, furniture polish and certain silk articles, produced a reaction in 16% of cases. Cat hair produced a reaction in 13% of cases, while dog hair and rabbit fur caused reactions in 3% and 8% of cases respectively. Sheep's wool caused a reaction in only one case; for that reason it is a good substitute for kapok and feathers in pillows and mattresses. Orris root, contained in certain types of face and body powder, caused reactions in only 6.5% of cases.

Pollen.—The air-borne grass pollens are the main factors in the second group, the representative rye grass and cocksfoot pollen having been used for testing. Rye grass pollen produced a reaction in 52% of cases and cocksfoot pollen in 47%. Capeweed pollen produced reactions in 17% of cases and plantain pollen in 22%. Sorrel pollen produced reactions in 31% of cases. Sunflower, dahlia and Iceland poppy pollen all produced lower percentages of positive reactions.

Foodstuffs.—Egg white was the commonest reaction-producing antigen in the food group; and it produced reactions in 60% of cases. Furthermore, a great proportion of these reactions were large, comparing strongly with those produced by horse dander in the first group. As the age of the children became greater the percentage of positive reactions fell steeply; this suggests that oral desensitization has played a part in diminishing sensitivity to egg white. Wheat caused reactions in 17% of cases, contrasting with egg white. Cow's milk caused reactions in 14%, while oatmeal caused reactions in only 9%. Barley, maize, rice and orange have occasionally been tested when the history suggested that they might be factors in the aetiology.

Discussion.

The foregoing results suggest that more attention should be paid to the investigation of cases of eczema from the viewpoint of sensitivity, and that an endeavour should be made to remove as many of the offending antigens as possible from the patient.

For infants, manipulation of the diet is difficult. It is often impracticable to obtain goat's milk as a substitute for cow's milk, and then some patent preparation of cow's milk seems best, for example, "Glaxo" or "Lactogen". Wheat is also difficult to avoid in a child's diet; but substitute bread-like foods can be made from potato and rye flour. It should be remembered that rye bread contains a certain percentage of wheat flour. Egg white can be completely avoided; even traces ingested will aggravate the condition of an egg-sensitive subject.

The avoidance of epithelium and dust can usually be satisfactorily achieved. Mattress and pillows should be of rubber or sheep's wool, and elderdowns must be removed from the bedroom or sleep-out. A sleep-out is the only way to eliminate house dust completely. Removal of domestic animals should be total, as their hair can be carried into the house on clothing. When orris root causes reactions the brand of powder used should be studied; "Java Rice" and "Johnson's Baby Powder" are orris-free.

The significance of pollen reactions is hard to assess, but they undoubtedly are a factor in later childhood. Desensitization with grass pollen extracts is indicated for older children.

In some cases avoidance of all antigens is impossible, and then desensitization with potent extracts results in pronounced improvement.

Besides the removal of offending antigens and desensitization, other necessary adjuncts to treatment are care of the skin eruption, correction of achlorhydria when it is present, and attention to possible foci of infection, such as sinuses and tonsils.

Conclusion.

The results of skin tests in fifty cases of eczema in childhood are shown.

Horse dander, egg white and grass pollens are by far the commonest reaction-producing antigens.

It is suggested that offending antigens should be eliminated as far as possible in each particular case. Desensitization is indicated when this is impracticable.

Acknowledgements.

I wish to thank Major C. E. V. Sutherland for kindly allowing me access to his private patients. I am grateful to Dr. A. B. Corkill for advice in setting out the table.

Reference.

⁽¹⁾ C. Sutherland: "The Detection of Hypersensitivity", THE MEDICAL JOURNAL OF AUSTRALIA, Volume I, 1935, page 549.

Reports of Cases.

A CASE OF EOSINOPHILIC LEUCHÆMIA.

By FRANK FENNER,
Major, Australian Army Medical Corps.

(From an Australian General Hospital.)

Of all the leucæmic diseases, the eosinophilic type appears to be the least satisfactorily defined. For that reason a brief report of a case of high and persistent eosinophilia associated with splenomegaly would seem to be of value. Owing to circumstances I am denied access to medical literature, so that discussion of the case must necessarily be limited.

Clinical Record.

Private G.E.H., aged nineteen years, was admitted to an Australian general hospital in July, 1942, with a history of dyspnoea on exertion, bouts of coughing, and shortness of breath, especially at night, present for the last two months. Investigation revealed that the patient had a long-standing history of asthma, and had been under medical treatment for that complaint for the previous five years. The attacks were worst in spring and autumn, especially in the moist climate of coastal north Queensland.

Physical examination showed the patient to be under-sized and thin (weight, seven stone ten pounds), and on several occasions during his stay in hospital he was observed to suffer from typical bouts of bronchial asthma, with laboured breathing and loud wheezing. The only other abnormal finding was that the spleen was palpable; it was enlarged about one inch below the left costal margin, firm, and not

tender. There was a slight enlargement of cervical, inguinal and axillary glands, which were firm, painless and freely movable. No increase in size of these glands occurred while the patient was under observation. Amongst fifteen relatives, one maternal aunt and her daughter suffered from asthma. The family history was otherwise without bearing on the case.

Radiographic examination of the chest revealed an increase of hilar and perihilar markings consistent with chronic asthma and bronchitis. There was some discrete glandular enlargement, but nothing suggestive of Hodgkin's disease. Fluoroscopic examination and the use of a barium bolus revealed no abnormal mediastinal condition. Radiographs of the chest had been taken four years previously, but according to the patient, they had revealed no gross abnormality.

The presence of the enlarged spleen led to examination of a thick blood film for malarial parasites. None of these were seen; but the obvious abnormality of the leucocyte picture led to detailed investigation of the blood.

During the three months of the patient's stay in hospital the numbers of white and red blood cells remained about the same. Weekly examinations were carried out, and the monthly figures given in Table I show the uniformity of the blood picture.

The eosinophile leucocytes were nearly all mature cells. A small number (1% or 2%) of eosinophile myelocytes were present in the peripheral blood. These cells, which were about the same size as mature eosinophile cells, had a single round of oval nucleus and a slightly basophilic cytoplasm, which contained few eosinophile granules. They were quite different from the cells in the bone marrow smears, which have been classified as eosinophile myelocytes in Table III. The latter were very large cells (20μ in diameter) and contained an oval nucleus, and the cytoplasm, which was slightly basophilic, was packed with eosinophile granules. They resembled premyelocytes, except that the granules were much more prominent than usual.

The rest of the mature eosinophile cells were larger than normal eosinophile leucocytes. The average diameter of the eosinophile cells of this patient (100 cells were measured) was 17.5μ , compared with 16.2μ for normal eosinophile leucocytes (measured from a film of the blood of a patient with eosinophilia associated with metazoan infestation). There was a moderate degree of vacuolation of the cytoplasm and nuclei of the eosinophile cells, but this was not much greater than is often seen in normal blood.

The serological investigations were interesting, and are set out in Table II. The investigations on August 10, 1942, were carried out independently at another laboratory.

TABLE II.

Date.	Kline Precipitation Test Result.	Wassermann Test.	Eagle Flocculation Test.
17. 7.42	Positive.	Not performed.	Not performed.
10. 8.42	Positive.	Negative result.	Not performed.
27.10.42	Positive.	Not performed.	Negative result.

Further investigations instituted to discover the possible cause of the eosinophilia all gave negative results. The Casoni test produced no reaction. No helminthic ova were seen at three examinations of faeces by concentration and direct smear method.

Examinations of the sternal marrow obtained by aspiration were made on July 23 and October 16. On the first occasion there was a considerable admixture of blood with

TABLE I.
Results of Blood Examinations at Monthly Intervals.

Date.	Total Leuco-cytes (Per Cubic Milli-metre.)	Differential Leucocyte Count. (Per centum.)								Haemo-globin Value (Grammes per 100 Cubic Centi-metres.)	Total Erythro-cytes (Per Cubic Milli-metre.)	Total Platelets (Per Cubic Milli-metre.)
		Eosino-phile Polymor-phonuclear Cells.	Eosino-phile Band Forms.	Eosino-phile Meta-myelocytes	Eosino-phile Myelo-cytes.	Neutro-phile Polymor-phonuclear Cells.	Lympho-cytes.	Mono-cytes.	Baso-phile Polymor-phonuclear Cells.			
14. 7.42	56,000	55.5	17.1	1.6	1.0	6.0	18.2	0.5	0.1	13.5	4,000,000	—
15. 8.42	64,000	53.6	13.9	2.6	1.5	8.5	20.2	0.6	0	—	—	—
2. 9.42	58,000	56.3	15.5	1.8	0.9	10.7	13.4	1.4	0	—	—	—
14.10.42	63,000	54.0	13.0	2.2	2.1	10.7	17.0	0.9	0.1	14.7	5,000,000	500,000

the marrow, but the later films contained a much higher proportion of marrow cells. Table III summarizes the findings.

TABLE III.
Sternal Marrow Cell Counts.

Types of Cells.	Date.		Normal Range.
	23.7.42.	16.10.42.	
Neutrophile polymorphonuclear cells	4.2	6.5	7.0 to 25.0
Neutrophile band forms	3.0	3.8	15.0 to 35.0
Neutrophile metamyelocytes	1.8	1.8	1.0 to 10.0
Neutrophile myelocytes	1.3	1.9	0 to 10.0
Eosinophile polymorphonuclear cells	51.3	41.1	0 to 1.0
Eosinophile band forms	12.1	13.4	0.8 to 2.6
Eosinophile metamyelocytes	5.6	6.4	0 to 2.0
Eosinophile myelocytes	5.4	5.6	—
Premyelocytes	0.7	0.6	0 to 10.0
Myeloblasts	0.2	0.3	0 to 2.0
Lymphocytes	8.5	5.1	4.0 to 18.0
Monocytes	0.1	0.2	0 to 5.0
Normoblasts	2.7	4.7	2.0 to 10.0
Pronormoblasts	1.8	6.8	2.0 to 15.0
Erythroblasts	1.3	1.2	0 to 5.0
Granulocyte/nucleated red cells	15.1	6.4/1	2.1 to 9.1

Summary of Case.

A youth suffering from moderately severe asthma with no symptoms referable to any other disease had a persistently high leucocyte count due to a great increase of abnormal but mature eosinophile cells. This was associated with the presence of a large, firm, palpable spleen, and the production of a positive result by the Kline precipitation test.

Comment.

The syndrome described appears to fit into the category of eosinophile leucæmia, as that disease is described by Whitby and Britton,⁽¹⁾ although Bray⁽²⁾ refers to a case of asthma reported by Herrick⁽³⁾ in which the leucocytes numbered 41,600 per cubic millimetre, 72.5% being eosinophile cells. Whitby and Britton state that "syphilis has been found in some cases and should always be tested for". By this they presumably mean that a positive result is produced to blood serological tests, but recent American investigations have shown that biological false-positive reactions, often relatively transient, occur in many diseases.

Eosinophile leucæmia is usually a chronic disease with a prognosis of about six years of life from the time of its discovery. The definite diagnosis of the case under discussion can be determined only by the progress of the disease.

Summary.

1. A case of gross eosinophilia in a youth, aged nineteen years, associated with asthma, an enlarged spleen, and no evidence of metazoan infestation, is described.
2. Detailed blood and bone marrow investigations suggest the probable diagnosis of eosinophile leucæmia.

Acknowledgements.

Captain Michael Perl, the medical officer in charge of the patient, has afforded me every assistance in the investigation, and Lieutenant-Colonel Ian Wood's help and suggestions are gratefully acknowledged. Major-General S. R. Burston, Director-General of Medical Services, has kindly given permission for this paper to be published.

References.

- ⁽¹⁾ L. H. Whitby and C. J. C. Britton: "Disorders of the Blood", 1935.
- ⁽²⁾ C. W. Bray: "Recent Advances in Allergy."
- ⁽³⁾ W. W. Herrick: "The Eosinophilia of Bronchial Asthma", *The Journal of the American Medical Association*, Volume LVII, 1911, page 1836; cited by Bray, loco citato.

Addendum.

Colonel K. B. Fraser, Deputy Director of Medical Services, Queensland Lines of Communication Area, kindly supplied the following later information (February, 1943):

... had five exposures of deep X-ray therapy. There has been a subjective improvement and the white blood cell count fell to 20,000 per cubic millimetre, but rapidly returned to 40,000, and the percentage of eosinophiles remained the same.

A CASE OF THE GUILAIN-BARRÉ SYNDROME.

By V. H. HIGGARTY,
Resident Medical Officer, Saint Vincent's Hospital,
Sydney.

Clinical Record.

F.M., aged thirty-three years, a boot-trader, attended the casualty department of Saint Vincent's Hospital on January 31, 1943, and was admitted to hospital under the care of Dr. R. J. Taylor. He gave a history of weakness of the legs and of difficulty in walking, beginning on January 26. At first this had not been pronounced, but it had gradually increased, so that by January 31 he could not walk unsupported. Since January 26 the weakness had been accompanied by pain in the shoulders, the back and the head.

The only additional symptoms which were admitted when he was directly questioned were some difficulty in swallowing present for the last three weeks, and insomnia, from which he had suffered for years, and which had been much worse during the week before his admission to hospital.

On examination, he was apyrexial. He was very drowsy, with slurred speech and a left-sided facial weakness, more pronounced in the lower part of his face. Flaccid paresis of his left arm and leg was present. All tendon reflexes were absent. The plantar reflexes were flexor in type. No sensory loss whatever had occurred, and no loss of sphincter control. In spite of his disability, he was not worried about his condition.

On the following day, bilateral facial palsy was present. Both arms and legs were almost completely powerless, and bilateral foot-drop was noted. Lumbar puncture was performed; the cerebro-spinal fluid was clear, and under a pressure of 60 millimetres. The protein content was greater than 500 milligrammes per cubic centimetre, the globulin content was moderately increased, and the cells numbered five per cubic millimetre. The Kline test produced no reaction.

His condition remained much the same for the next week, when his facial weakness became less severe and the dysphagia cleared completely. At this time, however, it was still necessary for him to be fed by a nurse, because of the weakness of his arms.

On February 13 it was noted that a great improvement had occurred during the preceding week and that during this time, although the patient was apyrexial, persistent tachycardia had been present. It was about this time that his unconcern began to disappear and that he began to worry about his prognosis. He was also made rather uncomfortable by paresthesia in his arms.

On February 19 he had sufficient muscular control to make foot splints unnecessary, though the patellar and ankle reflexes were still absent. The cerebro-spinal fluid had a protein content of over 500 milligrammes per cubic centimetre. On March 10 he was strong enough to be able to sit in a chair.

On March 18 lumbar puncture yielded clear fluid under low pressure; the protein content was 80 milligrammes per cubic centimetre and the cells numbered seven per cubic millimetre.

The patient left hospital on March 20, walking quite well, with no more weakness than would be expected in any patient who had spent the same length of time in bed. The tendon reflexes were still absent.

Comment.

The diagnosis of Guillain-Barré syndrome was made on the presence of an apyrexial peripheral polyneuritis with "acellular hyperalbuminosis" of the cerebro-spinal fluid. While the patient was hardly the euphoric described by K. Maddox and E. Susman,⁽¹⁾ he was completely unconcerned during the most severe stage of his illness. The complete clinical recovery was unaccompanied by return of tendon reflexes, and the protein content of the cerebro-spinal fluid failed to return to its normal figure before his departure from hospital. There was no wasting of muscles.

Acknowledgements.

My thanks are due to Dr. R. J. Taylor for his assistance in reporting this case, and to Dr. R. I. Eakin, the medical superintendent of Saint Vincent's Hospital, Sydney, for permission to publish the report.

Reference.

- ⁽¹⁾ K. Maddox and E. Susman: "The Guillain-Barré Syndrome", *THE MEDICAL JOURNAL OF AUSTRALIA*, Volume I, February 3, 1940, page 168.

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DAY NURSERIES, KINDERGARTENS AND THE BIRTH RATE.

TIME and again discussion has taken place in many quarters on the fact that for the past three-quarters of a century the Australian birth rate, in common with the birth rate of most European and American countries, has fallen and is continuing to fall. In the course of a reference to the subject in these columns, in August, 1938, it was stated that if the present trend continued for another ten years, the annual growth of population in Australia would, in the absence of immigration, be insignificant, and that by about 1955 the population would be practically stationary. Attention was drawn to the three elements comprising the problems of population—nativity, mortality and immigration. These three elements are so closely interwoven that it is really impossible to disentangle them, though they can, and for purposes of discussion should, be treated separately. That the problems of immigration and of birth are closely bound together, was made clear in a leading article dealing with Australia and post-war immigration that was published in this journal on September 27, 1941. On that occasion, figures given to the National Health and Medical Research Council by Dr. F. McCallum, of the Commonwealth Department of Health, were quoted to show that as many as 84,000 immigrants to Australia would be required every year after the war if the annual rate of 2% increase which was maintained in the early 1920's was to be reached. This was the figure if no immediate and material increase in the birth rate occurred. Perhaps it is necessary in passing to remind ourselves that these questions are worth consideration only if we agree that it is important that the nation should continue as a nation to occupy the country that it claims as its own and to work out its own destiny, a contention that is indefensible unless the nation is pre-

pared to develop the resources of the country in order to promote the health and general welfare of its own people and of other peoples in different parts of the world. Most members of the community will subscribe to the view that the Australian nation, in virtue of its inheritance and its acquired characteristics, has a contribution to make to the cause of humanity. The conclusion thus appears to be justified that the virility of the nation must be maintained and if possible increased, and that its members must not be allowed to become less numerous. Quantity as well as quality is necessary, for there is a great deal of truth in the saying: "Populate or perish."

In our discussion in August, 1938, on the falling birth rate many possible causes were enumerated; these included social and economic reasons and reference was also made to contraceptive measures. In addition it was suggested, on account of the smooth, progressive and universal fall in the birth rate among western peoples extending over a long period of time, that biological factors might also be operating. It is not our present intention to discuss the many causes of a fall in the birth rate, but in view of present industrial conditions and the obvious needs of the future to direct attention shortly to day nurseries and kindergartens, to the position of woman in industry and to associated questions. It is common knowledge that in the past many women have refused to bear children because of the way in which their activities would be restricted after the birth of the child. In some instances this may have been nothing but selfishness, but quite often it was not. The freedom of many a mother has been reduced almost to nothing; she has been wearied in body and reduced almost to a mental wreck by her continuous attempts at the persuasion or dissuasion of a wayward or even of a normally active child; probably she has had no training in the management of a child and knows nothing of the child mind. She becomes too tired even to try to learn. No great imagination is required to create a picture of the possible state of affairs in the home of such a woman. The effect is bad, not only for the woman, but also for the child, to say nothing of the father. If this woman could take or send her child to a day nursery, or if it was old enough to a kindergarten, she could have periods of freedom for the carrying out of duties or for well-earned relaxation; life would not be such a burden to her and both she and her husband would be less likely to shrink from the thought of further pregnancies. The war has caused an enormous influx of women into industry and the care of children has become a problem to many more women than before. But it is not only women in industry who are affected; women with families are being left without help in the house and some of them in certain centres are having soldiers or others in the services billeted on them. Clearly more women could engage in wartime industrial pursuits if suitable day nurseries or kindergartens were available to them. What the position of woman in relation to industry will be after the war is by no means clear. Many women have found that they can do work to which they had not previously given a thought; they can do the work well, sometimes as well as if not better than men can do it. If they wish to do work of the same kind when war has ceased, who can blame them and who will have the right to say them nay? There is a great deal to be said for the contention that the worth of a man or woman shall be determined by the

work in which he or she engages, in other words by his economic value to the State. Of course, if this view is accepted, it must also be acknowledged (and in British countries this will be done) that a woman who bears a family of children and rears them as self-respecting and useful citizens, is doing a work of the first importance, and one that cannot be measured by the State in terms of money. The conclusion is thus justified that if there was need before the war for day nurseries and kindergartens, there will be a much greater need for them when the war is over.

Day nurseries and kindergartens, though far too few in number, already exist in some centres in Australia. They are conducted by voluntary associations and, it is understood, receive some government support or subsidy. The arrangements are not quite the same in each centre. In some places another type of organization—the nursery school—has come into existence. The day nursery is really concerned, or should be concerned, with babies. Those in charge have to be trained in child-welfare methods and are concerned almost entirely with the bodies of their little charges. Children who are a little older would, in theory at least, be cared for in a nursery school. Children old enough for the type of teaching given in a kindergarten would attend such an institution. Thus it is clear that the real distinction between day nurseries and kindergartens is created by the age of the children. There should be no jealousy or antagonism between the bodies controlling them. As a matter of fact the two types of institution should be controlled by one body. What this body should be may be open to argument. In our opinion the controlling body should be the State; the staffs should consist of properly trained persons and children should be received regardless of the social standing of their parents. If these institutions were under the control of the State, they would be inspected from time to time by medical officers attached to the State department concerned. Moreover, the members of the staffs, being trained observers of children, would soon suspect any departure from normal health standards and advise parents to seek the opinion of the family doctor and the child would be brought under treatment.

This discussion has been undertaken from the point of view of population and the falling birth rate. The institutions that have been mentioned are only one factor among several others that should be linked with it as likely to have an effect on the population problem. Some of the other factors have been dealt with in a convincing way in the "Medical Planning Research" report, published in *The Lancet* of November 21, 1942, and discussed in this journal on April 10, 1943. The "adequate system of family allowances" mentioned in that report, combined with day nurseries and kindergartens, would help in no small way to lead married couples to look forward to parenthood and not to dread it and at the same time would allow them to be active, working members of society. One last word must be added lest we be accused of advocating measures that might tend to interfere with home-life or to weaken the influence of the home—the institutions under discussion would be used by those whose home-life without their aid would be unsatisfactory from the child's point of view; if the institutions were used in the right way, parents and children would be a stimulus to one another and not an irritation.

Current Comment.

THE DETERMINATION OF THE SPECIFIC GRAVITY OF BLOOD.

FROM time to time a new diagnostic procedure is announced as having a clinical value and the general practitioner is urged to acquaint himself with the technique and apply it to his patients. In some cases the claim to be clinical can be justified, in many it cannot. What are the attributes of a method which permit it to be labelled clinical and fit for general use by the average physician? In the first place it must be simple enough to be applied without long post-graduate training and experience in its use and, more important still, in the interpretation of the findings it gives. No one will deny that the electrocardiograph yields most valuable information concerning the origin and propagation of the contraction of heart muscle, but whilst the technique of making a record can be acquired without much difficulty, the interpretation of this record is a matter for the cardiologist. The Benedict-Roth apparatus for estimating basal metabolism is so simple that the technique can be learned by a young girl, but Professor Benedict uttered a warning to the profession that far too much importance was being assigned to its readings unsupported by other clinical findings, for he had learned that recommendations for thyroideectomy had been based on its evidence alone. A good clinical apparatus should also be portable and be easily replaced or repaired if broken; it is no use asking the general practitioner to purchase a costly appliance unless it can be kept safely in his rooms and shielded from the possibility of accident. Then, too, the information obtained must have real value in diagnosis and in the assessment of the response of the patient to treatment at any selected stage. The physician's thermometer is a first-class example of a clinical instrument; it is simple to use, in normal times it can be replaced without great cost or delay and it gives a numerical evaluation of its findings. The stethoscope has also the essential requirements for clinical use, though it fails to give other than qualitative information, and comparisons of sequent findings depend solely on the judgement of the operator. The several instruments for estimating systemic arterial pressure are also truly clinical, though, alas, today repair or replacement is difficult. In the case of chemical and bacteriological analysis it is easier to bring the body fluid to the laboratory than the laboratory to the bedside. The counting of corpuscular elements in the blood requires a microscope which is not easily transported, but the quantitative estimation of haemoglobin is bedside and clinical, though since the disuse of gas as an illuminant the Haldane method is no longer applicable in the patient's home and a reliable successor has not yet been found.

These reflections are prompted by the advocacy in recent American medical literature of a method for determining the specific gravity of blood and other body fluids which demands no costly apparatus. In 1927 H. G. Barbour and W. F. Hamilton described the "falling drop" technique in which a drop of the patient's blood was allowed to fall through a liquid immiscible with blood and with a specific gravity slightly lower.¹ The rate of fall can be made slow enough to be measured with accuracy and can be compared with the rate of fall of one of several standard potassium sulphate solutions so chosen that its density is fairly close to that of the test material. The solution was a mixture of xylene and bromobenzene and the proportions varied according to the fluid to be examined; for example, cerebrospinal fluid and most secretions required 80% xylene and 20% bromobenzene; anaemic blood required 75.3% xylene and 24.7% bromobenzene, whilst normal and anhydramic blood required 70.5% xylene and 29.5% bromobenzene. Some of the clinical applications of this method were discussed in 1940 in Scudder's book on shock,² and recently

¹ *The Journal of the American Medical Association*, Volume LXXXVIII, 1927, page 91.
² J. Scudder: "Shock", 1940.

an article by P. A. Gray and A. H. Elliot has emanated from the Santa Barbara Clinic complaining that this technique has not been accepted by the profession with the acclaim it deserves.¹ Gray and Elliot admit that the main cause of variation in specific gravity of blood is content of corpuscles, but they claim "greatest clinical usefulness" for the method in post-operative conditions. We may be quite convinced that this method of determining blood density is as accurate as its sponsors assert and that it does not involve the use of other than the simplest laboratory ware, but the question will inevitably be propounded and must be answered by the advocates of the technique whether all this trouble is worth while. Several solutions must be at hand, calculations must be made and corrections for temperature applied. When all this is faithfully carried out the result is the determination of one single physical property of the blood, and before the physician embarks on getting together the necessary materials he will want to know whether his haemocytometer does not afford evidence every bit as valuable. Proof must be forthcoming that this method gives something which other diagnostic procedures fail to recognize, and further that this something has real significance for the patient, before we can accept this or any other suggested technique as truly clinical.

ESSENTIAL HYPERTENSION.

No common agreement has ever been reached with regard to the question whether hypertensive disease is actually ever "essential", or whether it is always but a manifestation of an underlying vascular disease of the kidney. Practically all patients with "essential" hypertension develop sooner or later at least some signs of impairment of kidney function; although death does not occur from uræmia, the kidneys at post-mortem examination regularly show widespread vascular damage. These facts have led one group of medical investigators to believe that the kidney disease is the primary condition, and that it is only due to the crudeness of the kidney function tests at our disposal that we cannot detect it in the earlier stages. Another group of investigators has, however, adhered to the opposite view that the hypertension is often "essential", that is, due to causes so far unknown, but definitely not of renal origin. In their opinion the kidney lesions found at death are the result, not the cause, of the persistent hypertension. The second group has become decidedly smaller in recent years, mainly through the influence of the discoveries of H. Goldblatt, who could demonstrate that experimental restriction of the blood supply to the kidneys caused a persistent state of hypertension, well comparable with the human condition. Lately, H. Goldblatt and associates² have shown that their conclusions hitherto derived from experiments on dogs hold good also when sheep or goats are used as laboratory animals. There is also an increasing amount of clinical evidence, especially from cases of "surgical" kidneys, indicating that a mechanism as suggested by H. Goldblatt causes persistent hypertension in man. However, whether such a mechanism is actually responsible for the majority of cases of "essential" hypertension has again become more doubtful on account of investigations by B. Castleman and R. H. Smithwick.³ Many, studying their paper, will be surprised to learn that the authors performed in two years more than 100 dorso-lumbar sympathectomies for the relief of hypertension. Whatever one may think about the rationale of such therapy, it is true that this offered a unique opportunity to examine grossly the kidneys through the operative field and to take a biopsy from them. The results of the histological study of these biopsies were quite different from what would have been expected. When the kidney lesions were divided into five grades according

to their severity (0 = absent, 1 = minimal, 2 = mild, 3 = fairly severe, 4 = very severe) the number of cases falling into each group was as follows: 0, 7; 1, 21; 2, 25; 3, 33; 4, 14. This means that in more than half the cases the renal vascular system was so slightly damaged that it seemed unlikely that the blood flow could have been impaired sufficiently to be the one factor responsible for the hypertension; and this in a series of persons who had an average systolic blood pressure of 210 millimetres of mercury and an average diastolic pressure of 130 millimetres.

There is no doubt that these striking results will considerably strengthen the position of those who have maintained the essential nature of hypertensive disease. On the other hand it is equally certain that the opposition will not be completely convinced. One objection is bound to be raised, and, as a matter of fact, has been raised by B. Castleman and R. H. Smithwick themselves, the contention that a biopsy cannot be regarded as providing evidence representative of the general condition of the kidneys. This would find support in the fact that vascular disease of the kidneys is often patchy in distribution. The authors have attempted to anticipate this argument by pointing out that the site of biopsy was chosen after careful gross examination of both kidneys, that, furthermore, in 25% of their cases a biopsy specimen was taken from both kidneys and that there was no case in which one kidney had to be graded differently from the other.

We shall probably have to concede that the evidence with regard to the extrarenal origin of hypertensive disease is not wholly conclusive, but it is difficult to see what could be done to make it so. Short of discovering the actual cause outside the kidney, the best procedure would be to collect complete data from post-mortem examinations of persons dying from accidents or intercurrent diseases during the early stages of hypertension. But no individual or group is likely to observe a sufficient number of cases in a reasonable time, and the pooling of results of different investigators has always its difficulties. The problem will, for the time being, still remain in abeyance, but new material for thought has been undoubtedly added to the data on a question which is already one of those most widely discussed at the present time.

DEATHS AMONG AMERICAN DOCTORS IN 1942.

THE issue of *The Journal of the American Medical Association* for January 16, 1943, contains as a leading article an interesting analysis of 3,328 obituary notices published in the journal during 1942. The average age of the doctors at death was 65 years. Thirty-six died between the ages of 30 and 34, and nine died between the ages of 95 and 100. Heart disease accounted for the greatest number of deaths among the doctors. Coronary thrombosis and occlusion caused 627 deaths and other coronary diseases and *angina pectoris* 143. Other diseases of the heart and myocardium were responsible for 838 deaths. In this group cerebral haemorrhage appeared with 393 deaths, arteriosclerosis with 250 and cardio-vascular renal disease and chronic nephritis with 217. Cancer and various tumours caused 181 deaths, and of these 141 affected the gastro-intestinal tract. Exclusive of tuberculosis, disease of the respiratory system caused 239 deaths. Only one death was due to alcoholism and only one to psychosis with drug addiction. One hundred and twenty-three accidental deaths were recorded, 50 of them associated with motor-car accidents. One practitioner died from a rupture of the intestine caused by being squeezed between two operating tables. Forty-seven suicides were recorded. The list of doctors who held miscellaneous positions includes mayors, coroners, authors, bank presidents, legislators, missionaries, editors, clergymen, judges, lawyers, postmasters and sheriffs. One had been Secretary of the Interior, Postmaster-General of the United States, and Chairman of the Republican and National Committee. Eleven practitioners died in action during the present war and 37 died while in military service.

¹ *The American Journal of the Medical Sciences*, March, 1942, page 356.

² *The Journal of Experimental Medicine*, April, 1943.

³ *The Journal of the American Medical Association*, April 17, 1943.

Abstracts from Medical Literature.

PATHOLOGY.

Benign Chondroblastoma of Bone.

HENRY L. JAFFE AND LOUIS LICHTENSTEIN (*The American Journal of Pathology*, November, 1942) describe as a new entity amongst bone tumours the benign chondroblastoma of bone. It has usually been conceived in the past as a variant of giant cell tumour (calcifying or chondromatous) and sometimes even as a malignant tumour of bone, specifically a chondrosarcoma or an osteogenic sarcoma. The tumour starts its development in an epiphysis, usually of some long bone. It may extend to the articular surface of the epiphysis and even into the metaphysis, but nevertheless rarely attains a size of more than three to five centimetres in its largest diameter. The authors did not find that the lesion exhibits a predilection for the upper end of the humerus, although some previous workers have thought that it did. It does seem to occur particularly in males, and the patients are almost always adolescents or post-adolescents at the time when they seek medical care for the condition. When the x-raygram is considered in the light of the pathology of the lesion, there is much about to help make the diagnosis on a clinical basis. The basic tumour cell of the lesion is polyhedral or round and of moderate size, with a fairly large nucleus. The tumour cells may be closely packed or more loosely aggregated; very distinctive is the presence of focal areas of calcification of the cellular tumour tissue. Wherever the calcification becomes intense, the tumour cells swell and undergo necrosis. The necrotic tumour tissue is replaced by hyaline chondroid tissue which subsequently may show spots of ossification. There may be areas of hemorrhage, and one may see large vascular sinuses bordered by viable tumour tissue, necrotic tumour tissue, or hyaline chondroid material which has replaced necrotic tumour tissue. Clumps of large multinuclear giant cells may be seen in the areas of hemorrhage, about the vascular sinuses and even in the hyaline chondroid tissue. The lesion is entirely benign and heals without recurrence after thorough curettage, even without supplementary radiation. The authors think it is not proper to regard this lesion as a variant of giant cell tumour and hold that the tumour cells are chondroblasts and that the tumour is a benign chondroblastoma.

The Role of Hypersensitivity in Periarthritis Nodosa.

ARNOLD RICE RICH (*Bulletin of the Johns Hopkins Hospital*, September, 1942) reports that vascular lesions characteristic of periarthritis nodosa have been found in three groups of conditions as follows: (I) In the viscera of five patients who, shortly before death, had had hypersensitive reactions following therapeutic injections of foreign serum. Four of these patients had received sulphonamides, but in at least two of the cases the evidence indicated that the hypersensitive reaction was serum sickness and not drug

hypersensitivity. The fifth patient had serum sickness in the absence of sulphonamide therapy. (II) In a biopsy of muscle from a patient who had a hypersensitive reaction following foreign serum and sulphonamide therapy. (III) In the viscera of a patient who had received prophylactic sulphonamide therapy against aspiration pneumonia. None of these patients had had any symptoms suggestive of *periarthritis nodosa* prior to their terminal acute illness for which the serum or sulphonamide was administered, and the vascular lesions were fresh. These cases, together with other pertinent evidence discussed in the paper, indicate that vascular lesions of this type can be a manifestation of the anaphylactic type of hypersensitivity, and suggest the importance of a search for the inciting antigen in cases of *periarthritis nodosa* that come under clinical observation.

In the December number of the same journal the author reports an additional case in which *periarthritis nodosa* developed following a reaction (fever, conjunctivitis) to sulphathiazole. In this case there was an opportunity to examine tissue removed from the patient's scrotum at five months and at one week before the sulphonamide reaction occurred, and at nine days following the reaction. *Periarthritis nodosa* was not present in the specimens of scrotum removed before the reaction occurred. It was present there, and widespread throughout the body, following the reaction.

Tumours of the Striatothalamic and Related Regions.

JOSEPH H. GLORUS AND HARTWIG KUHLENBECK (*Archives of Pathology*, October, 1942) present evidence to emphasize the significance of embryonal and histogenetic factors in the production of brain tumours. They demonstrated that these factors are operative, particularly in the region designated as the striato-thalamic junction, including the *sulcus terminalis*, and in other areas—the zone of coalescence of the anterior horns of the lateral ventricles and the subependymal cell plate about the *nucleus caudatus* and the *septum pellucidum*. These zones, the striato-thalamic and others, have been found to be frequent sites of tumour formation. The explanation for this is to be found in the fact that they constitute common sites for embryonal residues. The tumours most commonly found in these situations are identified in accordance with a simple classification. The spongioneuroblastic variety is the most frequent, although others, such as *spongiblastoma multiforme* or *ependymoma*, as well as transitional forms, are occasionally encountered there. Tumours of the spongioneuroblastic variety are not infrequently multiple, with their distribution in zones of predilection for embryonal residues. The primitive character of embryonal residues found in the aforementioned locations is in all probability responsible for the character of the tumours developing there. Further evidence has been presented that the spongioneuroblasta and its transitional forms are of a type of tumour in which both neural and glial elements coexist in varying ratios. Tuberous sclerosis has been found frequently associated with the spongioneuroblastic variety of

tumour, and the fact that numerous ependymal granulations are frequently found in spongioneuroblastoma and tuberous sclerosis again points to the significance of the subependymal cell plate as the source of neoplastic alterations. Clinically this type of tumour is characterized mainly by the rapidity of the unfolding of the clinical picture in a large number of cases, by the frequency of convulsive seizures, by the depreciation of alertness and by somnolence as a frequent manifestation.

The Venous Valves in Thromboangiitis Obliterans.

It is well established that *thromboangiitis obliterans* attacks the veins of the extremities as extensively as it does the arteries. It would be indeed surprising if the delicate valves of the veins should escape involvement of some kind. Yet in the extensive literature on *thromboangiitis obliterans* Edward Allen Edwards and Jesse E. Edwards (*Archives of Pathology*, February, 1943) have found only a parenthetical mention of valvular changes. The lesions involving the valves are part of the changes in the blood vessels in general—first, inflammation; second, thrombosis; and third, dilatation secondary to the obstruction by the inflammation or thrombosis. The valves may be disrupted by the inflammation. Their excursion may be limited by their involvement in the inflammatory exudate in the valve or in the vessel wall, or by the formation of adhesions. In obstructive thrombosis the valve is destroyed by the organization and recanalization, any remaining portions being incorporated in the walls of the channel or channels. In mural thrombosis the cusps may be incorporated in the organizing tissue or their excursion limited by thickening and adhesion. The dilatation of the veins distal to areas of obstruction is associated with relative incompetence of the valve. The growth of reparative tissue often additionally thickens the cusps and makes them rigid. The thesis is presented that this may be but one part of a widespread proliferative change in *thromboangiitis obliterans* secondary to the obstruction of the blood vessels.

Preserving Hookworm Eggs in Faeces.

A. K. MUKERJI AND P. A. MAPLESTONE (*The Indian Medical Gazette*, March, 1943) wanted a method of preserving faeces which had to be sent from outlying places to a central laboratory so that the appearance and total numbers of any hookworm eggs in them would remain unaltered. They found that some solutions at present recommended for this purpose are satisfactory at low temperatures, but give unsatisfactory results at summer temperatures in Calcutta. They tried various solutions including "Antiformin" and other chlorine solutions, formalin, various aniline dyes, "Dettol", "Cyllin", para-nitrophenol, thymol, and various buffered salt solutions, none of which fulfilled their requirements. A 1% solution of common salt in tap water was found to preserve the eggs well, provided a sufficiently large volume of solution was used. The hookworm eggs were not well preserved when one part of faeces was stored in five parts of salt solution; but preservation was satisfactory in a dilution of 1 in 30. (The authors used three cubic centi-

metres of faeces in 87 cubic centimetres of 1% salt solution as convenient volumes to handle.) The hookworm eggs in faeces kept in this way remained unaltered in total numbers and appearance for three weeks, which should be long enough for a specimen to reach the laboratory. From the fourth week onwards the eggs became degenerate in appearance and the total number fell as time went on. These experiments were done at room temperature, which varied between a minimum of 76° F. and maximum of 97° F.

MORPHOLOGY.

Origin of Proprioceptive Fibres in Extrinsic Eye Muscles.

K. B. CORBIN AND R. K. OLIVER (*Journal of Comparative Neurology*, August, 1942), as a result of a series of degeneration experiments on adult cats, conclude that the proprioceptive fibres and endings in the extrinsic eye muscles are derived from cells which are located within the brain stem and are intermingled with the motor cells of the oculo-motor nerves. They also conclude that the mesencephalic root of the fifth nerve is not concerned with the innervation of the extrinsic eye muscles.

Partial Agenesis of Cerebellum and Medulla and Absence of Corpus Callosum.

W. J. VERHAART (*Journal of Comparative Neurology*, August, 1942) gives a clinical and anatomical description of a complex malformation of the central nervous system. The malformation consisted of agenesis of the mid-line areas of the cerebellum, including the whole vermis and the medial halves of the hemispheres. In addition the area of the vestibular and cochlear nuclei in the medulla was grossly underdeveloped, while the corpus callosum was absent. Clinical symptoms were chiefly due to the underdevelopment of the vestibular nuclei, and the absence of lateral movements of the eyes was also attributed to this defect. Cerebellar symptoms were not striking, but jerking of the head and totally uncoordinated movements of the legs occurred when the animal was held suspended.

Renal Fascia.

C. P. MARTIN (*The Journal of Anatomy*, October, 1942) states that the anterior layer of renal fascia does continue across the mid-line of the body in front of the aorta and inferior vena cava to become continuous with a similar layer on the opposite side of the body, but that this continuation in front of the great vessels is very thin and extends as a distinct layer upwards only as far as the origin of the superior mesenteric artery. The posterior layer of the renal fascia blends with the fascia covering the psoas major, especially at the medial and lateral edges of this muscle. But, in addition to these two layers, there is also a deeper stratum connecting the anterior and posterior layers around the medial border of the kidney, and this deeper stratum is pierced by the renal vessels and ureter. At the upper pole and lateral border of the kidney the anterior and posterior layers of the fascia fuse; at the lower

pole they also fuse, but much more weakly than in these other locations. Incidentally, the perirenal veins may be sufficiently large to merit attention during operations on the kidney. He states that his findings agree generally with the results of Mitchell's injection experiments, but they differ in detail from both his and Southam's description of the fascia.

Partitioning of the Human Heart.

T. C. KRAMER (*American Journal of Anatomy*, November, 1942) presents a restudy with the aid of wax reconstructions of the formation of the septal systems of the human tricuspid and conus arteriosus and their union with the primary interventricular septum. This region has been of interest because of its importance in the development of the pattern of the circulation, and the frequency of its involvement in congenital defects of the heart. The author emphasizes the statement that the present account is not radically at variance with the studies of earlier workers, but does fill in certain gaps in the story and serves to bring into line observations which in their earlier fragmentary form appeared contradictory.

The Spinal Cord in Congenital Absence of the Right Limb.

G. J. ROMANES (*The Journal of Anatomy*, October, 1942) describes the spinal cord of a newborn child whose right lower limb was missing from the knee joint downwards. Marked reduction of the right side of the spinal cord in the lumbosacral region was noted. This affected the posterior column, and, opposite the roots of the sacral plexus, the posterior and anterior horns of the grey matter. The last-mentioned showed an almost total loss of the postero-lateral and postero-lateral motor cell columns which supply the leg and the foot. The loss of these cell columns of the anterior horn was considered to be the result and not the cause of the developmental insufficiency of the peripheral mesoderm.

Mesencephalic Root of the Fifth Nerve: Probst's Tract.

K. B. CORBIN (*Journal of Comparative Neurology*, December, 1942) has studied in cats, following experimental interruption of the mesencephalic root at different levels, the origin and course of that portion of the mesencephalic root of the fifth nerve which descends caudal to the exit of the trigeminal, that is, Probst's tract. Probst's tract arises from the ventral one-fourth of the mesencephalic root, and its cells of origin are apparently scattered throughout the entire extent of the mesencephalic nucleus of the fifth nerve. There is no evidence from this investigation that it arises from the nucleus of the locus caeruleus. It descends midway between the dorsal tip of the spinal trigeminal tract and the genu of the seventh nerve, in close relationship with the salivatory nuclei. It finally comes to lie immediately ventral to the nucleus of the solitary tract. Its fibres gradually disappear at the level of the dorsal motor nucleus of the vagus, ventral and lateral to which its caudal part lies. In the Marchi preparations no collaterals are seen passing to the facial nerve or nucleus or to the vestibular nuclei. The intimate anatomical relationship between

Probst's tract and the salivatory, dorsal vagal and solitary tract nuclei suggests a functional association concerned in masticatory, salivary and gustatory reflexes.

Number of Ganglion Cells in Retina Compared with Number of Optic Fibres.

L. B. AREY AND M. GORE (*Journal of Comparative Neurology*, December, 1942) state that the number of ganglion cells in the retinae of four adult dogs varied between 192,160 and 149,320, with a mean value of 167,308. These differences tend to be correlated with the size of the eyeball, or better, with retinal area; the latter varied considerably (extremes of 170:100) in animals whose extremes of weight ranged from 37.0 to 2.5 kilograms. The average density of distribution of the ganglion cells is not proportionate in retinae differing in area. The smallest retina has the greatest relative concentration of ganglion cells, and vice versa. Similar correlated variations in the number of ganglion cells of man (and most other mammals) might well pass undetected since the human eyeball varies less in size than does that of the dog. The ratio of ganglion cells to optic fibres is shown for the first time to be approximately 1:1. The slight excess of ganglion cells found is probably not significant. Previous reports of the existence of large numbers of internuncial ganglion cells (that do not send optic nerve fibres to the brain) are not substantiated. The number of optic fibres in the human optic nerve is about 1,000,000.

Development of the Cranial Autonomic Ganglia in Cats.

E. J. COWHILL AND W. F. WINDLE (*Journal of Comparative Neurology*, December, 1942) state that the primordia of the cranial autonomic ganglia arise from neuroblasts which have migrated from the fifth, seventh and ninth (petrosal) cranial sensory ganglia along nerve fascicles. The ciliary ganglion is formed by neuroblasts which migrate from the semilunar ganglion by way of the ophthalmic nerve from the 5.5 millimetre to the 18.0 millimetre stage. The primordium of the sphenopalatine ganglion receives contributions of cells from the semilunar ganglion along the maxillary nerve and from the geniculate ganglion by way of the greater superficial petrosal nerve. Migration takes place along the maxillary nerve from 6 millimetres to 14 millimetres and along the greater superficial petrosal nerve from the 7 millimetre to the 40 millimetre, or perhaps the 60 millimetre stage. The primordium of the otic ganglion receives its principal contribution of cells from the semilunar ganglion by way of the mandibular nerve, but a few neuroblasts appear to migrate from the petrosal ganglion along the lesser superficial petrosal nerve. Stages of migration along the mandibular nerve are from 7 millimetres to 15 millimetres and along the lesser superficial petrosal nerve from 9 millimetres to 21 millimetres. The submaxillary and sublingual ganglia are formed by neuroblasts which migrate from the semilunar ganglion by way of the lingual branch of the mandibular nerve from the 7 millimetre to the 15 millimetre stage.

Public Health.

PARLIAMENTARY JOINT COMMITTEE ON SOCIAL SECURITY.

The following is a statement presented in evidence to the Parliamentary Joint Committee on Social Security by Mr. A. O. von Kelsenberg, Secretary of the Department of Health, New Zealand.

HEALTH BENEFITS UNDER PART III OF THE SOCIAL SECURITY ACT OF NEW ZEALAND.

1. The statutory provisions governing "Medical and Hospital Benefits and other related benefits" are as follows:

- (a) Part III of the *Social Security Act*, 1938 (the principal Act).
- (b) *The Social Security Amendment Act*, 1939 (Section 8).
- (c) *The Social Security Amendment Act*, 1940 (Section 13).
- (d) *The Finance Act* (No. 4), 1940 (Sections 13 and 14).
- (e) *The Social Security Amendment Act*, 1941; and
- (f) *The Finance Act* (No. 2), 1942 (Section 12).

2. Benefits under Part III of the Act are generally referred to as "Health Benefits". They are administered by the Minister of Health.

3. There are five general classes of Health Benefits provided for in the Act, namely: (a) Medical benefits. (b) Pharmaceutical benefits. (c) Hospital benefits. (d) Maternity benefits. (e) Such supplementary benefits as are deemed necessary to ensure the effective operation of the aforementioned benefits or "otherwise to maintain and promote public health".

4. The principal Act authorises the Minister of Health to fix the commencing date of any class of benefits as soon as arrangements can be completed for their effective administration.

5. Health Benefits are available to all persons ordinarily resident in New Zealand. The right to benefits is restricted only in cases where a person receiving medical, hospital or pharmaceutical treatment is entitled to recover the expenses of such treatment by way of compensation or damages.

6. There is a general provision empowering the Minister to appoint committees to advise on the various classes of benefits or to hear disputes that may arise.

7. The general arrangements contemplated for several classes of benefits involve contracts between the Minister and medical practitioners, chemists, midwives and other persons. A special provision is made affecting the termination of any such contracts by the Minister. In particular it is provided that contracts of service may be terminated by the Minister only after investigation by and on the recommendation of a special tribunal which consists of:

- (a) A President who must be either a Judge of the Supreme Court or a Magistrate; and
- (b) Not less than two persons who are members of the same profession or calling to whose contract the investigation relates.

8. A further general provision is one empowering the Minister to make such special arrangements as in the circumstances he deems necessary for the purpose of providing that adequate services in lieu of all or any of the benefits provided for in Part III of the Act will be available for the benefit of any person or classes of persons.

This power has been availed of in providing medical services in districts with scattered populations either by direct appointment of doctors or per medium of Hospital Boards or Medical Associations.

9. The following are the classes of Benefits so far inaugurated:

- (i) Benefits in respect of treatment in State Mental Hospitals, 1st April, 1939.
- (ii) Maternity Benefits, 15th May, 1939.
- (iii) Hospital Benefits (in respect of in-patient treatment), 1st July, 1939.
- (iv) Hospital Benefits (in respect of out-patient treatment), 1st March, 1941.
- (v) Medical Benefits under the Capitation Scheme, 1st March, 1941.
- (vi) Pharmaceutical Benefits, 5th May, 1941.
- (vii) Benefits in respect of General Medical Services as an alternative to the Capitation Scheme, 1st November, 1941.
- (viii) X-ray Diagnostic Services, 11th August, 1941.
- (ix) Massage Benefits, 1st September, 1942.

Particulars of the various benefits in operation are given in separate statements.

Benefits in Respect of Maintenance and Treatment at State Mental Hospitals.

These benefits were inaugurated on 1st April, 1939. With the exception of one small private mental hospital, all mental hospital provision in New Zealand is undertaken by the Government, so that no very special arrangements were necessary in order to provide this class of benefits, which comprises free maintenance and treatment in all State Mental Hospitals, both for committed patients and voluntary boarders.

The Social Security Fund is called upon to pay to the Consolidated Fund an annual sum approximating that collectable under the system in force before the benefits were introduced. The assessed sum for the inaugural year, 1939-40, was £166,000, and for the current year, 1942-43, is £183,000.

Maternity Benefits.

1. Maternity Benefits commenced on 15th May, 1939. This class of benefits provides for payments from the Social Security Fund for the following classes of services: (a) Treatment in Maternity Hospitals. (b) The services of Obstetric Nurses in the home. (c) The services of doctors.

Treatment in Maternity Hospitals.

2. Hospital Boards¹ provide about 850 beds for maternity cases either in separate maternity hospitals, or in wards or annexes of general hospitals. Licensed private maternity hospitals provide about 1,150 beds and four St. Helens Hospitals conducted by the Department of Health provide 90 beds.

3. The period of hospital care which is subject to benefits comprises the day or days of labour and the fourteen days succeeding the date of birth of the child. Any hospital treatment received prior to or subsequent to that period is not the subject of Maternity Benefits, but may be the subject of Hospital Benefits.

4. Payment from the Social Security Fund in respect of Maternity Benefits in accordance with the Regulations is at the rate of £2 5s. for the day or days of labour and 12s. 6d. a day for the succeeding fourteen days. In case of Hospital Boards an additional fee of £2 is payable in respect of any patient actually attended during labour and at delivery by a medical officer employed by the Hospital Board.

5. A Hospital Board is bound to accept these fees in full satisfaction of its claims for the period to which they relate.

6. A general arrangement regarding licensed maternity hospitals provides for individual contracts with licensees specifying among other things the fees if any which it is agreed the licensee may charge over and above the payment from the Social Security Fund. Of the 203 hospitals, only 2 have not entered into contract to provide hospital services in relation to Maternity Benefits. A number of them accept the payment from the Social Security Fund in full satisfaction of their charges. The fees payable from the Fund were in fact fixed in consultation with representatives of private hospitals with a view to ensuring that entirely free treatment would be available in at least the more modest type of hospital.

7. Lists of the private hospitals whose licensees have entered into contracts are displayed for public information at Post Offices and at District Offices of the Health Department. These lists indicate whether the licensee of each particular hospital accepts the payment from the Fund in partial or in full satisfaction of the charges for hospital care during the confinement period.

Unless the licensee of a private maternity hospital has entered into a contract to afford hospital services in relation to maternity benefits, the payment of fees for hospital services is a matter of private arrangement and the fees are not a charge on the Social Security Fund, either wholly or in part.

To meet the cases of women who by reason of some actual or suspected abnormal condition or who because of the danger of conveying an infection to other maternity cases, cannot be confined in a maternity hospital, special regulations have been made. These regulations authorise the payment of Benefits in respect of confinement (in such circumstances) in a licensed medical and surgical hospital.

8. In the case of the Government St. Helens Hospitals, maintenance and treatment is entirely free of charge so far as the patient is concerned. The payment made from the Social Security Fund to the Consolidated Fund is now on the basis of £5 5s. per confinement.

¹ Reference to the constitution, functions and finance of Hospital Boards is made in the notes on Hospital Boards.

Services of Obstetric Nurses in the Home.

9. Contracts have also been entered into with some 300 obstetric nurses whose names and addresses are published for general information and who have undertaken to provide nursing services in the patient's own home. The full-time services of these nurses are available during the confinement period, or if the patient so wishes, the nurse may be engaged on a part-time visiting basis.

The amount payable from the Fund for nursing services during the day or days of labour and the fourteen days succeeding the date of birth of the child is £11 2s. or £10 2s., depending upon whether or not the obstetric nurse acts in the capacity of the midwife, that is to say, without a doctor in attendance. A part-time visiting nurse is paid £5 10s. or £4 10s., depending upon the capacity in which she attends the patient. These payments from the Fund must be accepted by the obstetric nurse in full satisfaction of her claim for nursing services in relation to maternity benefits, and the patient is fully relieved of financial liability for such services.

10. Experience in the administration of maternity benefits showed instances to arise where an intending patient would engage the services of a contracting obstetric nurse or hospital licensee, but when the services were required they could not be obtained. Special regulations were therefore made in May, 1940, to enable benefits to be paid in respect of the services of any qualified nurse who in emergency or for any sufficient reason attended a patient who had previously engaged the services of a contracting nurse or hospital.

Medical Services in Relation to Maternity Benefits.

11. Medical services that are the subject of Maternity Benefits fall into two general classes, namely: (1) Medical services afforded in a Hospital Board Hospital by a medical officer in the employ of the Board; a fee of £2 per confinement is paid in these cases. (2) Medical services afforded by a doctor in the course of private practice.

Particulars of the arrangements affecting this class of service are as follows:

12. When Maternity Benefits were first introduced the general arrangement for the provision of medical services was a form of a contract between each individual doctor and the Minister of Health. However, relatively few of the available doctors entered into contracts and negotiations were therefore reopened with the representatives of the medical profession in an attempt to meet the situation.

The Social Security Amendment Act, 1939, gave statutory effect to a scheme for medical services in relation to Maternity Benefits which has been evolved as a result of these further negotiations.

13. The present scheme which came into operation on 1st October, 1939, provides that every doctor undertaking maternity work in the course of his practice will be entitled to receive payment from the Social Security Fund in respect of his services according to a scale of fees fixed by agreement between the Minister of Health and the Council of the New Zealand Branch of the British Medical Association. The fee for attending abnormal confinement and giving ante-natal advice is £5 5s. Additional fees are payable in respect of special services which are set out in the scale of fees.

14. The fees from the Social Security Fund must be accepted by the doctor in full satisfaction of his claims, except that officially recognised Obstetric Specialists whose names are published for general information are permitted to charge the patient an additional fee.

15. Any practitioner who is unwilling to provide services in relation to Maternity Benefits may notify the Minister to that effect. A list of any such practitioners is published for general information. Very few of the doctors (only five in fact) have declined to work under the scheme.

Any fees charged by a doctor whose name appears on the list of practitioners who have notified their unwillingness to afford medical services in relation to maternity benefits are the personal liability of patients.

16. There is also a special provision in the *Amendment Act* that if a patient, for private reasons, does not wish to avail herself of Benefits, and notifies her doctor to that effect, the doctor's fees are a matter of private arrangement.

17. Under the present Scheme payment from the Fund is also made for medical services in relation to miscarriage provided the patient has received approved Ante-natal advice before the occurrence of the miscarriage. The fee payable is £3.

18. The services of an anaesthetist or a consultant in relation to maternity are also the subject of payment from the Fund.

19. The range of medical services in relation to maternity that are provided for in the present scheme is set out in the scale of fees agreed upon between the Minister and the Council of the New Zealand Branch of the British Medical Association (Form Mat.B:20).

Procedure to Obtain Maternity Benefits.

20. The services comprising the Benefits may be obtained in the same manner as hitherto—the person desiring the services simply applies to the doctor, hospital or nurse of her choice. When the relative service has been afforded the patient or someone competent to act on her behalf is required to sign a certificate to that effect. This certificate forms the basis of the claim on the Social Security Fund and payment is made directly to the person who has been given the service.

21. From the patient's point of view Maternity Benefits provide:

- (1) Free treatment by a general practitioner before, during and after birth, and
- (2) Free accommodation and nursing in hospital (though a patient may have to pay extra fees in respect of maintenance in certain private hospitals), or
- (3) Free treatment by a registered maternity nurse in the patient's own home.

Expenditure on Maternity Benefits.

22. The following is a summary of the expenditure on Maternity Benefits during the three years ended 31st March, 1942:

	1939-40 (10½ months)	1940-41	1941-42
Public Hospitals.			
Cases treated .. .	7,642	10,538	11,336
Average cost .. .	£9 14 10	£10 2 9	£9 19 10
Private Hospitals.			
Cases treated .. .	13,185	20,275	21,605
Average cost .. .	£10 10 2	£10 11 2	£10 10 5
Usual fee £5 5s., but average lower on account of partial services.			
Obstetric Nurses.			
Cases treated .. .	1,854	2,335	2,056
Average cost .. .	£8 12 10	£9 0 9	£9 3 3
Medical Practitioners' Fees.			
Cases treated .. .	10,380	32,882	36,282
Average cost .. .	£4 8 6	£4 18 4	£4 17 6

Hospital Benefits.

1. Hospital Benefits are not specifically defined in the Act, but in general form, consist of payments from the Social Security Fund in respect of hospital treatment and maintenance afforded in any public or private hospital.

The statutory provisions relating to Hospital Benefits do not in themselves confer any right to hospital treatment, but in general provide: (i) That in respect of hospital treatment received in a public hospital no charge shall be made against the patient. (ii) That in respect of hospital treatment received in a licensed private hospital or a hospital "recognised and approved" for the purposes of Benefits, payments from the Fund (on the same scale as payments in respect of public hospital treatment) shall be accepted in partial satisfaction of the charges for such treatment.

2. For the purpose of these benefits the Act provides the following definitions:

"Hospital" means a hospital or other institution maintained by a Hospital Board under the Hospitals and Charitable Institutions Act, 1926, or a private hospital licensed under Part III of that Act, and includes any other institution or place in which sick or injured persons are received for treatment and which is for the time being recognised and approved by the Minister as a hospital for the purposes of this Part of this Act.

"Hospital patient" means a person for the time being maintained in a hospital for the purpose of receiving hospital treatment therein.

"Hospital treatment" means all medical and surgical treatment and nursing care and attendance afforded in any hospital to a hospital patient, and includes the maintenance in the hospital of any such patient; and, in the case of a public hospital, also includes such treatment as may be prescribed in respect of outpatients.

The decision of the Minister that any treatment afforded in or at a hospital is or is not hospital treatment for the purposes of this Part of this Act shall be final and conclusive.

3. In-patient treatment became the subject of benefits on 1st July, 1939.

"In-patient treatment" is, for administrative purposes, deemed to include in addition to active medical and surgical treatment by or under direction of registered medical practitioners, isolation under medical supervision, physical restraint under medical supervision, and medical observation or examination including laboratory and X-ray examinations.

4. In-patient treatment afforded to sick or injured members of a hospital staff either in the wards or in rooms provided for patients generally or in a special ward or room reserved in the hospital for members of the staff requiring hospital care is also the subject of hospital benefits.

5. No limitation is placed on the period of hospital treatment subject to benefits.

Treatment in Hospital Board Institutions.

6. The function of providing all classes of public hospitals other than mental hospitals is vested in district Hospital Boards constituted under the *Hospitals and Charitable Institutions Act*. The Dominion is divided into 42 hospital districts, each under the control of a Hospital Board whose members are representatives of contributory local authority districts within the hospital district. The members of the Board are elected at the same time as members of the contributory bodies (Municipalities, County Councils *et cetera*) by the electors of those bodies.

7. The principal sources of finance of Hospital Boards are patients' fees, now mainly derived from the Social Security Fund, contributions from local authorities and Government subsidy on those contributions. The scheme of finance briefly is that Hospital Boards after allowing for receipts by way of patients' payments, now mainly Social Security, find their requirements by levies on local authorities and Government subsidy on those levies. There is a varying scale of subsidies (14s. to 20s. per pound) in respect of levies for maintenance purposes, but an average rate throughout the Dominion of pound for pound. In respect of levies for capital purposes a flat rate of pound for pound subsidy is payable by the Government.

8. Payment in respect of hospital treatment in Hospital Board institutions was fixed at the rate of 6s. a day which Boards are required to accept in full satisfaction of their charges. The rate was determined by particular regard to the average fees collections of Hospital Boards. In every case the rate of 6s. a day was estimated to produce more, in some cases considerably more, than Boards had previously collected from patients.

9. The administrative work of dealing with claims by Hospital Boards in respect of hospital benefits is rendered comparatively simple for the reason that the accounts of these bodies are subject to regular Government Audit inspection, and it is therefore possible to provide for a simple form of monthly claim, details of which were subject to Audit verification subsequently.

10. In respect of treatment in private hospitals payment from the Social Security Fund is made at the same scale as for Hospital Boards, namely, 6s. a day. The private hospital licensee is required to apply the payment from the Fund in reduction of the total charges for hospital treatment.

Hospital Benefits for Out-Patients.

1. Out-patient treatment in hospitals maintained by Hospital Boards, which became the subject of Benefits on 1st March, 1941, includes all medical, surgical or other treatment afforded to a patient by the staff of the hospital or by any person acting by direction of the Hospital Board, except:

- (a) Dental treatment.
- (b) The supply of any drugs, medicines or appliances (including dressings) that are not taken by the patient or applied in the course of his treatment at the hospital, but are intended for his subsequent use.
- (c) X-ray services for purposes of diagnosis only.
- (d) Laboratory services for bacteriological or pathological purposes.
- (e) Any treatment afforded to an out-patient in his own home or place of residence.

The supply of drugs and medicines to an out-patient is the subject of benefits under the Social Security (Pharmaceutical Supplies) Regulations which are explained in a separate statement. X-ray Diagnostic Services afforded to out-patients are also the subject of a separate class of benefits under the Social Security (X-ray Diagnostic Services) Regulations, dealt with in a separate statement.

Treatment afforded to an out-patient in his home or place of residence is now in most cases covered by medical benefits or benefits in respect of General Medical Services. Dental treatment and laboratory services for bacteriological or pathological purposes are not as yet the subject of benefits.

2. In respect of services covered by out-patient benefits, Hospital Boards are paid 60% of their actual expenditure on salaries and materials and they must accept this payment in full satisfaction of their charges. This basis of payment was made possible by the general system of finance of Hospital Boards, and in addition to avoiding the formulation of elaborate scales of fees covering the variety of out-patient services, it grades the payments from the Fund to Hospital Boards in direct relation to the actual costs incurred which necessarily vary owing to the size and location of the hospitals concerned.

3. Out-patient services at the Tourist Department's Sanatorium at Rotorua and at the Health Department's Neurological Hospital at Hanmer Springs are also free of charge to the patient.

Procedure to Obtain Hospital Benefits.

4. Out-patient treatment for the purpose of benefit is obtainable in much the same manner as hitherto. Hospital Boards are obliged to keep records of attendances and also to retain the data on which the assessment of their expenditure on salaries and materials is made. Claims on the Fund are rendered at quarterly or longer intervals.

5. The expenditure on out-patient benefits for the year ended 31st March, 1942, was £47,162. There was some lag in claims for the initial year and the estimated expenditure for a full year is £100,000.

6. The patient is entitled to the whole benefit of any payment made from the Fund on his or her behalf and payment may in fact be withheld unless the Minister is satisfied that the amount payable from the Fund will, up to the full extent of such amount, be applied in reduction of the charges that would be payable by the patient.

7. In addition to the public hospitals and licensed private hospitals, there is another limited class of semi-public hospitals which in accordance with the Act has been approved for the purposes of Hospital Benefits. This includes the Karitane Public Hospitals (6) conducted by the Royal New Zealand Society for the Protection of Women and Children, more commonly known as the Plunket Society, and in addition the Knox Home for Incurables and an institution operated under a charitable trust. Special rates of payment were determined for these classes of hospitals having regard to their other sources of income and such payments are required to be accepted in full satisfaction of the claim of the institution authorities; in other words, treatment is entirely free so far as the patient is concerned.

8. Hospital Benefits have also been made available in respect of Government special hospitals, namely, the Queen Mary Neurological Hospital, Hanmer Springs, and the Rotorua Sanatorium. Payment from the Fund at the uniform rate of 6s. per day is made in respect of treatment in these two institutions and the fees charged to patients are reduced by a corresponding amount.

9. A summary of the expenditure on Hospital Benefits in respect of in-patient treatment for the three years ended 31st March, 1942, is as follows:

	1939-40 (10½ months) £	1940-41 £	1941-42 £	1942-43 £ Estimated.
Treatment in Public Hospitals	514,254	893,251	953,793	960,000
Treatment in Private Hospitals	82,980	141,737	146,963	150,000
Treatment in Approved Institutions	1,459	37,873	28,155	40,000
Contribution to Consolidated Fund for:				
Mental Hospitals	166,000	171,000	181,451	184,000
Queen Mary Hospital	6,833	10,060	11,705	20,000
Rotorua Sanatorium	2,707	4,712	4,985	6,000
	774,235	1,258,633	1,327,042	1,360,000

For the year 1941-42 the average daily number of inpatients receiving hospital benefits was approximately 18,300, as follows:

(a) Public Hospitals	8,600
(b) Mental Hospitals	7,950
(c) Karitane Hospitals and approved Institutions	450
(d) Private hospitals	1,300
		18,300

Medical Benefits.

1. The principal Act originally contained provisions for medical benefits under a general arrangement by which contracts would be made between the Minister and individual practitioners. These provisions, however, were subsequently repealed and in the *Finance Act* (No. 4), 1940, new general arrangements were provided.

2. Under these arrangements, which came into operation on 1st March, 1941, practitioners may enter into agreements with individual patients in a prescribed form and manner for the provision of medical benefits by the medical practitioner. Subject to his compliance with terms and conditions prescribed in the Regulations, every medical practitioner who enters into any such agreements is entitled in respect of each person affected to the capitation fees from time to time prescribed.

3. "Medical Benefits" are defined as all proper and necessary services of medical practitioners, except:

- (a) Medical services afforded in relation to Maternity Benefits.
- (b) The administration by medical practitioners of anaesthetics in any case where a medical practitioner by whom an anaesthetic is administered acts in assistance of or in collaboration with any other medical practitioner or registered dentist.
- (c) Medical services that involve the application of special skill and experience of a degree or kind that general medical practitioners as a class cannot be reasonably expected to possess.

In a case of emergency any medical practitioner who has undertaken to provide medical benefits for any person is required to render whatever medical services are in the circumstances in the best interests of his patient, notwithstanding that any such service is excluded by the last preceding sub-clause. Any medical service so rendered in a case of emergency is deemed to have been rendered as medical benefits.

4. In detail the scheme provides for the uplifting by persons entitled to benefits of forms of application and agreement which are available at any Post Office or District Health Office throughout the country. The form of application is completed by the person desiring benefits and presented to the doctor of his choice. If the doctor is willing to afford medical benefits to the applicant, he signs the form of agreement embodied in the card and forwards it to the Medical Officer of Health for the district in which the patient resides. On receipt of the card the Medical Officer of Health issues to the person concerned a Medical Benefits Card which constitutes evidence of the person's right to medical benefits from the doctor named in the card.

Remuneration of Doctors.

5. The issue of medical benefits cards is recorded by the Medical Officer of Health, who causes to be prepared at regular intervals each month a statement of additions to and deletions from the Patient's List of each doctor. These statements are forwarded to the doctor concerned and are intended to serve as his record of patients. The statement for the period ended 15th of each month is the basis of payment to the doctor by way of capitation fees, which are at the rate of 15s. per patient *per annum*. In addition to the annual capitation fee the doctor is entitled to payment of mileage fees in respect of certain patients not resident in the borough in which he resides or has his main surgery.

6. In respect of patients whose residence is more than three miles' distant from the residence or surgery (whichever is the nearer) of the nearest general medical practitioner, the doctor is entitled to receive mileage fees from the Fund at the rate of 2s. per mile (counted one way) *per annum*, with a maximum of 17 chargeable miles, except in special circumstances. Such travelling distance as is not the subject of payment from the Fund may be the subject of payment by the patient directly to the doctor. Provision is made for variation of mileage rates where the Department is satisfied that the nature of the route of travelling results in the travelling being unusually expensive or unusually time-consuming.

Termination of Agreements in Respect of Medical Benefits.

7. In any case where a patient desires to change his doctor, the transfer becomes effective immediately if both doctors agree to the transfer. If, however, the doctor affording benefits does not consent to the transfer, the transfer does not become operative until the expiration of the month following the month during which notice of the proposed transfer is received by the Medical Officer of Health.

8. The foregoing provisions apply where the patient resides in the area of practice of both doctors. If the patient removes to a locality not visited by the doctor on whose list his name appears, he may transfer immediately on obtaining the acceptance of a doctor in the new locality. The transfer of patients to the lists of doctors who resume civilian practice in their old district after being absent on military service is made specially easy.

9. A doctor may terminate his agreement in respect of a particular patient by giving due notice to the Medical Officer of Health, who is obliged to inform the patient accordingly. The patient's name is removed from the doctor's list of patients as from the date of his acceptance as a patient by another doctor or on the expiration of the month following the month during which the original doctor's notice is received by the Medical Officer of Health. Provision is made in the Regulations to safeguard the position of a person who is in need of treatment. Accordingly, it is the duty of a doctor who gives notice of his desire to terminate an agreement in respect of a person who is in need of treatment, to inform the Medical Officer of Health of this fact. In such a case the patient's name is not removed from the doctor's list until he has been accepted by another practitioner or until the expiration of the month following the month in which the medical practitioner advises the Medical Officer of Health that the patient is no longer under treatment or in immediate need of treatment.

10. Provision is contained in the Regulations enabling a doctor to withdraw from the scheme by giving three months' notice. Shorter notice may be accepted at the discretion of the Minister. Shorter notice may properly be given by a doctor if material alterations are made in the general arrangement for the provision of benefits. In accordance with the Social Security (Medical Benefits) Regulations, 1941, doctors undertaking to provide medical benefits are required to fulfil the following obligations:

- (1) To provide and maintain suitable surgery and waiting room accommodation.
- (2) To be in attendance for consultation and treatment at regular times.
- (3) To visit patients where their condition of health makes it impossible or inexpedient for them to visit the medical practitioner at his surgery.
- (4) To prescribe such drugs and appliances as are required for the treatment of the patient, and to supply such drugs or appliances in emergency.
- (5) To issue free of charge such medical certificates as are required by patients for the purposes of the Social Security Act or for the purposes of obtaining any medical or other treatment that is not within the scope of the obligations of the medical practitioner.
- (6) To answer all reasonable enquiries made by the Medical Officer of Health with respect to prescriptions, certificates or recommendations given or issued.
- (7) Generally to comply with the requirements of the Social Security (Medical Benefits) Regulations, 1941.

11. The medical benefits capitation scheme was taken up by comparatively few doctors, the number at present operating under it being 40. They had at 31st March, 1942, 84,407 patients on their lists.

General Medical Services.

1. Owing to the fact that so few medical practitioners had accepted the medical benefits capitation scheme, new provisions were made in the *Social Security Amendment Act*, 1941, Sections 3 to 13, for payments from the Social Security Fund on a fee-for-service basis. These provisions came into operation on 1st November, 1941.

2. "General Medical Services" are defined in the Act as all proper and necessary services of medical practitioners except the following:

- (a) Medical services that involve the application of special skill and experience of a degree or kind that general medical practitioners as a class cannot reasonably be expected to possess.
- (b) The administration by medical practitioners of anaesthetics in any case where the medical practitioner by whom an anaesthetic is administered acts in assistance of or in collaboration with any other medical practitioner or a registered dentist.
- (c) Medical services afforded in relation to maternity benefits.
- (d) Medical services provided by any medical practitioner in respect of which he would not be entitled to recover any fees from the patient or any other person if the Act had not been passed.
- (e) Medical services provided by any medical practitioner under an agreement with a friendly society; and
- (f) Such other services as may be excluded by regulation.

3. The following services are excluded by regulation, subject to the qualification that anyone of them may in special circumstances and with the approval of the Minister be brought within the scope of general medical services:

- (a) Medical services involved in any medical examination of which the sole or primary purpose is the obtaining of a medical certificate (for production to some other person) as to the condition of health of the person examined;
- Medical certificates for the purposes of monetary benefits under Part II of the Social Security Act and for the purposes of sickness benefits for friendly society members are, however, within the scope of "general medical services";
- (b) Medical services involved in the treatment of any venereal disease in a communicable form;
- (c) The extraction of teeth;
- (d) Medical services afforded in the case of injury in respect of which the injured person is entitled to compensation or special damages on account of medical or surgical attendance;
- (e) Medical services for which fees are payable under the Social Security (X-ray Diagnostic Services) Regulations, 1941.

4. If any question arises as to whether any service provided by a medical practitioner is included in the expression "general medical services", or as to whether any amount, and if so, what amount, is payable from the Fund, it shall be decided by the Minister after consultation with the appropriate committee appointed under section eighty-three of the principal Act, and the Minister's decision shall be final.

5. A medical practitioner who provides any general medical services is entitled to receive from the Fund the amount of 7s. 6d. for each consultation at his surgery or visit to the patient's residence during any week day. For any such service urgently requested and duly afforded at any time on a Sunday or between the hours of 9 p.m. and 7 a.m. on any other day, a fee of 12s. 6d. is payable from the Fund.

The Medical Officer of Health may approve a claim for a higher fee than 7s. 6d. or 12s. 6d. if the relative medical service necessarily involved more than 30 minutes of the practitioner's time.

6. In addition to the fees for medical services, mileage fees at the rate of 1s. 3d. per mile of the outward and return journey are payable from the Fund for visits necessarily paid to patients at places within 20 miles of the practitioner's residence or surgery. No mileage is, however, payable in respect of visits within a borough if the practitioner concerned resides or has his surgery in that borough. Claims for mileage may be disallowed or reduced by the Medical Officer of Health if it appears that alternative arrangements less costly to the Fund could conveniently have been made. Any amount so disallowed may be recovered by the practitioner directly from the patient.

7. A special provision of the general medical services scheme and one that is widely availed of is that where any person pays an amount to a medical practitioner in respect of general medical services or pharmaceutical requirements, that person is, subject to the provisions of the Act, entitled to receive from the Social Security Fund a refund of the amount so paid, provided that the total amount refunded in respect of any such services or requirements must not exceed the amount the practitioner would have been entitled to receive directly from the Social Security Fund.

8. Medical practitioners are not obliged to accept the payments from the Fund in full satisfaction of their charges, nor, as indicated above, are they under obligation to make direct claims on the Fund. They are, however, required to furnish appropriate receipts to patients to enable them to claim refunds. Moreover, practitioners are unable to recover by legal process any fees in excess of those fixed by the Act, unless the patient or some responsible person competent to act on behalf of the patient refuses to sign the necessary certificate enabling the practitioner to claim on the Fund.

9. The "capitation scheme" outlined under the heading "Medical Benefits" is still operating. The two schemes run concurrently, and doctors who have lists of patients under the former arrangements may, if they wish, afford "general medical services". A patient whose name is included on a doctor's list under the capitation system is not entitled (during such time as his name appears on such list) to the general medical services provided under the amendment Act of 1941, except in cases of emergency, when he cannot obtain the services of the doctor on whose list his name appears.

10. To facilitate the provision of general medical services certain obligations are imposed on patients. Default in any

of the obligations enumerated hereunder renders the patient or the person acting on behalf of the patient liable to penalty equal to fees paid in respect of the matter to which the default relates. The patient's obligations are as follows:

- (a) To refrain from making unnecessary demands upon the services of any medical practitioner, whether at his surgery or elsewhere.
- (b) To arrange, wherever practicable, that the patient shall attend for treatment at the surgery of the medical practitioner.
- (c) If the patient is prevented, by reason of the condition of his health or for other sufficient reason, from attending the medical practitioner at his surgery, to notify the medical practitioner as early as possible, and, except in cases of emergency, not later than 10 a.m. of the day when a visit is required, that the patient requires to be visited by the medical practitioner.
- (d) To sign, when required so to do by the medical practitioner, such certificates or other forms as may be required in accordance with these regulations to enable the medical practitioner to make a claim for the payment of fees from the Fund.
- (e) To furnish without unreasonable delay any information required by or in the name of the Medical Officer of Health in relation to any claim for the payment of fees made by a medical practitioner, or in relation to any certificate given for the purpose of any such claim.

11. The regulations authorise the Medical Officer of Health to request a medical practitioner to furnish explanatory statements in relation to any claim. If the medical practitioner refuses or fails to furnish the required statement within twenty-one days, the Medical Officer of Health will refer the matter to the Minister, who, after consultation with the appropriate committee appointed under Section 83 of the *Social Security Act*, 1938, may:

- (a) Direct that the claim be disallowed partially or wholly, or,
- (b) If the claim has been paid, authorize the Medical Officer of Health to take the necessary steps to recover from the medical practitioner the whole or a specified part of the claim, as a debt due to the Crown.

12. If a medical practitioner wilfully refuses or fails to sign any receipt or certificate required for the purposes of a refund of fees paid to him by or in respect of any patient, or to supply any information required by a Medical Officer of Health in respect of any claim, he renders himself liable on summary conviction to a fine of £10.

Special Arrangements.

13. There is in Section 82 of the principal Act general provision empowering the Minister of Health to make such special arrangements as in the circumstances he deems advisable for the purpose of providing that adequate services in lieu of all or any of the Benefits provided for in Part III of the Act shall be made available for the benefit of any persons or classes of persons. This provision has been utilised particularly in connection with medical services in country districts. Under these special arrangements there are now some seventeen doctors who are employed on virtually a salary basis. Nine of them are in direct agreement with the Minister to provide general medical services in their defined area of practice. The remuneration is a gross annual rate intended to include practice expenses, except that in some four instances a Departmental car is provided and maintained.

14. In the case of six other practitioners arrangements are made with Hospital Boards who employ practitioners on practically a full-time basis to provide general practitioner services in accordance with terms and conditions approved by the Minister. In two other cases the special arrangements are made with local Medical Associations (in mining districts) who employ the doctors on conditions approved by the Minister and claim reimbursement of salary and certain expenses from the Fund.

15. *Arrangements through Friendly Societies.*—In addition to the provisions of the Act enabling the Minister to make special arrangements were availed of to enable Friendly Societies who continued to maintain their own medical benefits schemes to receive a contribution from the Social Security Fund.

Expenditure.

16. Expenditure on the provision of general medical services, including capitation scheme and special arrangements, is estimated for the current year, 1942-43, at £920,000, as follows:

Medical Benefits and General Medical Services	£ 793,500
Special Arrangements	53,000
Mileage	73,500
	£920,000

Pharmaceutical Supplies Benefits.

1. The principal Act made provision for pharmaceutical benefits in respect of drugs, medicines and appliances ordered by a practitioner "in the course of providing any medical benefits or other benefits in accordance with Part III of the Act".

As the Medical Benefits scheme contemplated under the principal Act was not proceeded with and the capitation scheme was not accepted by many doctors, the powers in the Act to provide supplementary benefits were invoked and provision was made by regulations for the free supply of pharmaceutical requirements on the prescription of any medical practitioner.

2. This class of benefit was introduced on 5th May, 1941. The general arrangement is for contracts between individual proprietors of licensed pharmacies and the Minister of Health. In terms of the contract the pharmacist undertakes to supply pharmaceutical requirements to persons entitled thereto in accordance with the regulations.

3. The range of pharmaceutical requirements that are the subject of benefit are defined in a document known as the Drug Tariff issued under the hand of the Minister of Health.

4. The Drug Tariff imposes limits on the quantities of drugs which may be supplied on any one prescription, but the Medical Officer of Health may in special cases authorise supplies for an extended period.

5. All such medicines and drugs as are included in the Drug Tariff and are prescribed by any medical practitioner and dispensed or compounded by a contracting chemist are the subject of payment from the Social Security Fund and no charge may be made to the person submitting the prescription provided he is entitled to benefits.

6. The Drug Tariff also sets out the prices and fees payable to contracting chemists, and since the inception of this type of benefits the prices payable are those set out in the "Official Schedules and Rules for Prescription Pricing" issued by the Pharmacy Plan Industrial Committee under the authority of the Industrial Efficiency (Pharmacy) Regulations, 1938, subject, however, to a discount of 2·5%.

Of the 558 licensed pharmacists in the Dominion, only 5 are not under contract to provide pharmaceutical requirements. All of the 5 are in districts where the services of a contracting chemist are available.

7. The general procedure affecting claims on the Fund is as follows. A person who presents a prescription to a contracting chemist is required to sign the back of the prescription and insert his address as evidence that he has received the medicines prescribed therein. A contracting chemist submits a half-monthly claim supported by all the prescriptions to the nearest Pricing Office. (Pricing Offices are established at four centres, namely, Auckland, Wellington, Christchurch and Dunedin.) The chemist may price his own prescriptions before rendering them to the Department, or he may, as the majority are now doing, render them unpriced, leaving the pricing to be undertaken by the specially trained staff of the Pricing Office.

8. Pharmaceutical Supplies Benefits are also available at Out-patient Departments of some of the larger hospitals, and payments are made to Hospital Boards on the same basis as for contracting chemists.

9. A special provision in the Pharmaceutical Supplies Benefits scheme is for the supply of midwifery requirements on the order of a licensee of a private hospital or an obstetric nurse who has been engaged to provide maternity benefits to the woman concerned. The list of midwifery requirements contains only four items. These are enumerated in the Drug Tariff.

10. In a limited number of localities where pharmaceutical requirements are not conveniently obtainable from a contracting chemist or a public hospital, special arrangements have been made with medical practitioners for the dispensing of medicines *et cetera*. Payment in these cases is usually on the same basis as for contracting chemists, except that instead of a 2·5% discount from the ordinary schedule prices a 10% discount is imposed.

11. Expenditure on pharmaceutical benefits for the current financial year, 1942-43, is estimated at £550,000, or approximately 7s. per head of population. The number of prescriptions for the year is expected to reach a total of about 3,200,000. The average price paid from the Fund per prescription is approximately 3s. 1d.

Benefits in Respect of X-ray Diagnostic Services.

1. Under the powers given the Minister to provide Supplementary Benefits, the Benefits in respect of X-ray Diagnostic Services were made available on 11th August, 1941.

2. Benefits are provided in respect of X-ray examinations carried out (a) by radiologists employed by Hospital Boards and (b) radiologists in private practice.

3. In respect of X-ray services afforded by Hospital Boards payments are made from the Fund according to a Schedule of Fees set out in the Regulations, and such payments must be accepted by the Board in full satisfaction of their charges.

4. In the case of a private radiologist it is necessary for the purposes of the benefits that he apply for and obtain official recognition by the Minister as a radiologist. An applicant for recognition may be granted "absolute" or "limited" recognition. "Absolute" recognition is in respect of all classes of X-ray Diagnostic Services and it is usually afforded to medical practitioners wholly specialising in radiological work. "Limited" recognition may exclude certain classes of examination or may be in respect of specified classes to the exclusion of all other classes.

The arrangements for benefits in respect of X-ray examinations carried out by private radiologists were completed early in 1942, and benefits in respect of these services were made available on and from 25th February, 1942.

5. The Schedule of Fees payable from the Fund provides two scales, namely, (a) fees payable to Hospital Boards and to radiologists afforded "limited" recognition, and (b) fees payable to radiologists whose recognition under the regulations is "absolute".

6. Provisions governing the recognition of radiologists enable the Minister to impose certain conditions, and one condition that has been invariably imposed is to limit to specified amounts the fees that may be charged by the radiologists over and above those payable from the Social Security Fund. The additional fees so fixed are set out in a printed list (forms Rad. B5 or Rad. B6) which the radiologist is required to display in his consulting rooms.

7. The range of services covered by the fees comprise:

- (a) The making of X-ray examinations with the aid of a fluorescent screen.
- (b) The taking of X-ray photographs.
- (c) The supply and administration of any drugs or other substances for the purposes of any such examination or photograph.
- (d) The provision of medical services incidental to any such examination or photograph except medical services of a kind that are not ordinarily performed by radiologists as such (whether in any particular case such services are performed by the radiologists or by any other medical practitioner).
- (e) The provision of any other incidental services for the purposes of any such examinations or photographs.

Benefits are not, however, applicable with respect to X-ray examinations or X-ray photographs made or taken for dental purposes or for the purposes of life insurance.

8. Up to 31st December, 1942, 15 practitioners had received "absolute" recognition and 11 have received "limited" recognition as radiologists.

9. The general procedure regarding payment is that claims are made directly by the Radiologist on the Department for the amount of the fee payable from the Fund. The form of claim includes a certificate by the patient that he had attended, on the date or dates specified, for the purpose of X-ray examination, and includes also a statement from the Radiologist as to the fee charged or proposed to be charged exclusive of that payable from the Fund. In addition the claim must be accompanied by a signed recommendation of the medical practitioner on whose recommendation the services have been rendered, or if the X-ray services have been afforded by the radiologist to his own patient, must be accompanied by a brief statement of the reasons for rendering the service.

10. During the period 11th August, 1941, to 31st March, 1942, payments from the Fund in respect of this class of Benefits amounted to £28,000. For the current financial year (1942-43) the estimated cost is £89,000.

Massage Benefits.

1. Benefits in respect of massage treatment afforded by masseurs in private practice were introduced on 1st September, 1942, in accordance with the Social Security (Massage Benefits) Regulations, 1942.

2. Massage is defined in the Massage Benefits Regulations as "the use by external application to the human body of manipulation, remedial exercises, electricity, heat, light or water for the purpose of curing or alleviating any abnormal condition of the body".

3. The general arrangement for these Benefits consists of individual contracts with registered masseurs under which they are paid from the Social Security Fund a fee of 3s. 6d. for each massage treatment and undertake not to charge the patient any additional fees in excess of 3s. 6d. for treatment afforded in the masseur's rooms or 7s. for treatment afforded elsewhere than in the masseur's rooms.

4. No massage treatment is recognised for the purpose of the Benefits unless it is given on the recommendation of a medical practitioner and no more than four weeks' treatment may be given on a single recommendation. Any treatment recognised for the purpose of Benefits must, moreover, be afforded not later than six weeks after the date on which it is recommended by the medical practitioner.

5. This class of Benefits has not been long enough in operation to indicate with any approximation the annual cost. To date some 71 masseurs have entered into contract to provide massage benefits. This number is thought to include almost every masseur who is engaged in private practice. It is not expected that payments from the Fund in respect of Massage Benefits will exceed £20,000 for a full year.

Naval, Military and Air Force.

CASUALTIES.

ACCORDING to the casualty list received on June 22, 1943, Captain H. K. Denham, A.A.M.C., Brisbane, has been placed on the "seriously ill" list.

According to the casualty list received on June 22, 1943, Major C. Rudd, A.A.M.C., Auchenflower, Brisbane, has been placed on the "dangerously ill" list.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Simpson, Ian Gordon, M.B., B.S., 1942 (Univ. Sydney), 48, Kingslangley Road, Greenwich.
Johns, Kevin, M.B., B.S., 1941 (Univ. Sydney), 132, Albany Road, Stannmore.
Middleton, Peter Guy, M.B., B.S., 1943 (Univ. Sydney), "Inveraray", Heydon Avenue, Warrawee.

Australian Medical Board Proceedings.

TASMANIA.

THE undermentioned have been registered as duly qualified medical practitioners:

Lancaster, Christopher, M.B., B.S., 1943 (Univ. Melbourne), Royal Hobart Hospital, Hobart.
Macgowan, Ian Thorburn, M.B., B.S., 1943 (Univ. Melbourne), Royal Hobart Hospital, Hobart.
Sisson, Keith Harold, M.B., B.S., 1943 (Univ. Melbourne), Royal Hobart Hospital, Hobart.
Spinks, Betty Brenda, M.B., B.S., 1943 (Univ. Melbourne), Royal Hobart Hospital, Hobart.
Stretton, Philip John Crawford, M.B., B.S., 1943 (Univ. Melbourne), Royal Hobart Hospital, Hobart.
Smith, Rowland Anthony Godfrey, M.B., B.S., 1943 (Univ. Sydney), Launceston Public Hospital, Launceston.

Medical Appointments.

Dr. Thomas Ernest Victor Hurley, according to the provisions of the *Hospitals and Charities Act*, 1928, of Victoria, has been reappointed a member of the Charities Board of Victoria.

Sir Trent Champion de Crespigny, D.S.O., has been appointed Chairman of the Council of the Institute of Medical and Veterinary Science, Adelaide, South Australia.

Dr. Lewis Wibmer Jeffries, D.S.O., O.B.E., has been appointed a member of the Council of the Institute of Medical and Veterinary Science, Adelaide, South Australia.

Books Received.

"The 1942 Year Book of Neurology, Psychiatry and Endocrinology"; "Neurology" edited by Hans H. Reese, M.D.; "Psychiatry" edited by Nolan D. C. Lewis, M.D.; "Endocrinology" edited by Elmer L. Sevringhaus, M.D.; 1943. Chicago: The Year Book Publishers, Incorporated. 7½" x 5", pp. 768, with 134 illustrations. Price: \$3.00, post paid.

Diary for the Month.

JULY 6.—New South Wales Branch, B.M.A.: Council Quarterly.
JULY 7.—Victorian Branch, B.M.A.: Branch.
JULY 7.—Western Australian Branch, B.M.A.: Council.
JULY 9.—Queensland Branch, B.M.A.: Council.
JULY 13.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
JULY 13.—New South Wales Branch, B.M.A.: Organization and Science Committee.
JULY 13.—Tasmanian Branch, B.M.A.: Branch.
JULY 20.—New South Wales Branch, B.M.A.: Ethics Committee.
JULY 21.—Western Australian Branch, B.M.A.: Branch.
JULY 22.—New South Wales Branch, B.M.A.: Clinical Meeting.
JULY 23.—Queensland Branch, B.M.A.: Council.
JULY 27.—New South Wales Branch, B.M.A.: Medical Politics Committee.
JULY 28.—Victorian Branch, B.M.A.: Council.
JULY 29.—New South Wales Branch, B.M.A.: Branch.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phoenix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia.

Editorial Notices.

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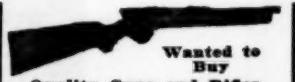
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